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**housing** analysis of housing types and comparative  
designs in dense urban residential sectors /  
**generated by** translation of user-needs into physical form /  
evaluation of student designs and existing  
projects on a  
comparative basis /  
**user-needs** one of a continuing  
series of studies in  
environmental design  
by the graduate school  
of design / harvard  
university / cambridge  
massachusetts / june 1972



L1  
H281  
X  
C.3



# Preface

Square footage was established as a standard for minimum housing by federal legislation which created the Federal Housing Administration in 1934. These minimum standards were subsequently investigated and developed further by the John B. Pierce Foundation which went beyond square footage to a more realistic evaluation of space as 'virtual volume', whose parameters were described by actual activities taking place within the house. Later still, the American Public Health Association Committee on the Hygiene of Housing added still further to the literature on "standards for healthful housing" by publishing Planning the Home and Planning the Neighborhood.

Given the constraints of federal and local regulations and the demands of financial viability, severe limits have been placed on available options for architects.

Recently, more enlightened legislation combined with a new awareness of the complexity of solutions to housing problems by design professionals has led to an attempt to focus attention beyond the most 'efficient' use of land, materials and space, toward larger issues of family development and realization of human potential.

It was with this in mind that in the Spring Term, 1971, the Urban Design Program under the direction of Professors Wilhelm von Moltke and Thomas Sieverts with the cooperation of their students, began to articulate and give measure to as many of the myriad humanistic aspects of desirable habitat as time and available techniques would allow. I was present at the final presentation of the semester's work on Housing and User-Needs and was much impressed by its quality. With the authors' permission, I determined to take their work as a point of departure for the one year Master of Architecture class project in the Fall, 1971.

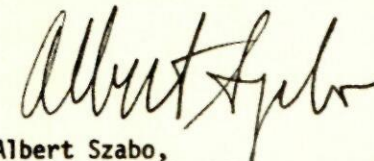
After discussion with my co-critic, Kenneth DeMay, I sought and received the support of Dean Maurice Kilbridge and Professor Jerzy Soltan, Chairman of the Department of Architecture. Through their good offices I was able to obtain the assistance of Thomas Simmons, who had been among the original students working on the project in the Urban Design Program, as a Teaching Fellow in my master's Studio.

Phase I of our investigation consisted of a comparative analysis of already existing housing (primarily in the Boston Metropolitan area) including detailed construction, cost, and amenity information on: a) dwelling unit; b) unit-to-unit relationship; c) multiple unit relationship to site; and d) site to urban context.

During Phase II, the class divided into two teams: Team 1, "The Methods Group", sought to develop, refine and establish means of evaluation of user-needs. Team 2, "The Design Implementation Group", elected to produce designs based on the findings of Team 1.

It is our hope that this investigation will be one of a 'continuing series' of studies of vital issues in which all design professions at the Graduate School of Design are involved.

I should like to express particular thanks to Professor von Moltke who has given his cooperation throughout, to Dean Kilbridge for his encouragement and to the Milton Fund for its financial support.



Albert Szabo,  
Professor of Architecture and Visual and Environmental Studies



# CHURCH

The church of the Holy Trinity, founded in the year 1845, is a small but beautiful building of wood, with a steeply pitched roof and a small steeple. It is situated in the heart of the village, and is the center of the community. The church is well-kept and is a source of pride to the people of the village. The services are held every Sunday, and are well-attended. The church is a place of worship and a place of comfort for the people of the village.

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# Credits

The material contained in this study was prepared by students of the Harvard Graduate School of Design, the 'Masters Class', Architecture 2-4a, during the Fall and Spring Term, 1971-72.

Fall Term: Masters Class, Department of Architecture

Faculty: Albert Szabo, Professor of Architecture  
Kenneth DeMay, Visiting Critic  
Thomas B. Simmons, Teaching Fellow

Students: Americo Andrade  
Michael Azarian  
Harry Baxter  
Kenneth Britz  
Yong Duk Chyun  
Greg Lukmire  
Yasumitsu Matsunaga  
Lloyd Meyer  
Brad Neal  
Richard Pollack  
Willy Sclarsic  
John Sinclair  
Douglas Svitchan  
Vichai Tantradhivudh  
Archie Tiner  
Michael Washington  
Lonnie Wilkinson

Spring Term: Seminar on Housing Generated by User-needs

Faculty: Professors Albert Szabo and Wilhelm von Moltke  
Thomas B. Simmons, Student Chairman

Students: Michael Azarian  
Kenneth Britz  
Yong Duk Chyun  
Brad Neal  
John Sinclair



# JOHN W. WILSON

The following is a list of the names of the persons who have been admitted to the membership of the Society since the last meeting.

Mr. J. W. Wilson, Secretary.

Mr. J. W. Wilson, Treasurer.

Mr. J. W. Wilson, President.

Mr. J. W. Wilson, Vice-President.

Mr. J. W. Wilson, Corresponding Secretary.

Mr. J. W. Wilson, Recording Secretary.

Mr. J. W. Wilson, Librarian.

Mr. J. W. Wilson, Editor.

Mr. J. W. Wilson, Treasurer.

Mr. J. W. Wilson, Secretary.

Mr. J. W. Wilson, President.

Mr. J. W. Wilson, Vice-President.

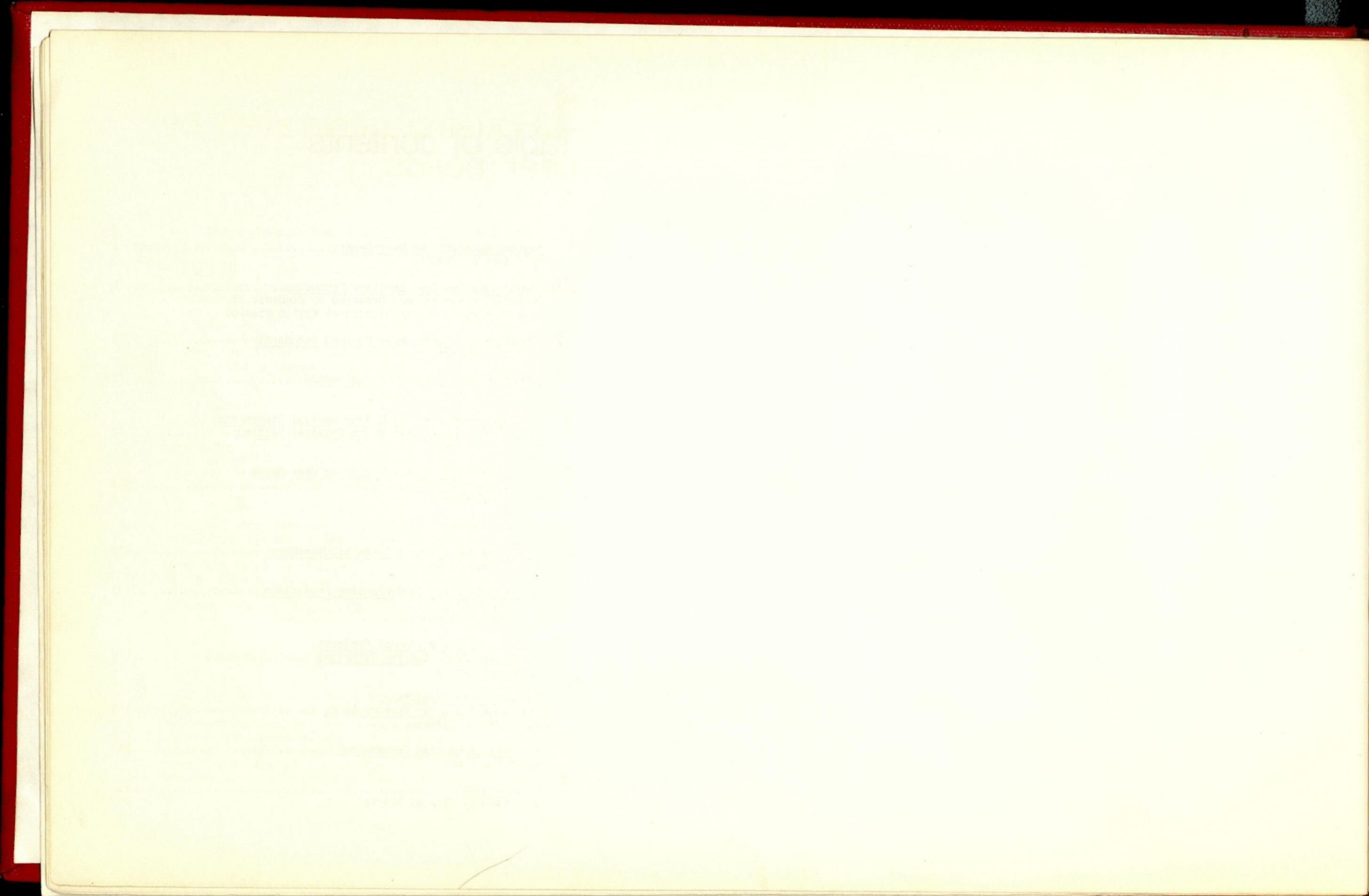
Mr. J. W. Wilson, Corresponding Secretary.



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# 1. Housing generated by user needs

## 1.1 BASIC OBJECTIVE: THE DESIGN OF HOUSING GENERATED BY THE NEEDS OF ITS USERS

During the fall term, 1971, seventeen students of the 2nd professional degree, 'Master's Class at Harvard, concerned themselves with the design of housing emphasizing the needs of the actual users as a prime determinant for design. The work represents a continuation of the study of user needs and their application to design that was conducted by students of the Urban Design program during the previous term. Emphasis in their study, Housing and User Needs, was placed on the derivation of specific user need requirements from basic goals set for large scale, urban communities. User needs were tested in terms of location and in reference to urban context; for example, the location of elderly units with reference to proximity to transportation, necessary services, etc. The degree of building to building separation was studied with reference to the needs of children, the degree of control by mother or parent from the dwelling unit to play spaces, and reliance on private automobile versus public transportation.

For this second phase, architectural students could now place the emphasis on the translation of general statements concerning the needs of users into designs for habitation. It was the translation process from words to design that formulated the basic work. Thus, the process was of evolving a design form that was generated primarily from the understanding of user needs, and secondarily from all the other considerations effecting comprehensive architecture.

## 1.2 SCOPE AND PROCEDURES: PHASE I, COMPARATIVE HOUSING ( 4weeks duration)

A basic grounding in the realities of costs, financing, rent structure and physical limitations on design is an important, indeed, requirement of knowledge, prior to treating the design of housing from purely humanistic considerations. To assist in this basic prior input the first phase of studies involved the evaluation of existing projects on a systematic and comparable basis. Information sought during this phase included the



following:

Range of unit types within the project

Costs to build, costs to rent or buy, comparison of  
how much for what price

Description of environmental quality in terms of the  
following:

- 1) Relationship of space to space, quantitative and qualitative, within the dwelling unit entity
- 2) Relation of the dwelling unit to dwelling unit in the building configuration, horizontal and vertical arrangement about corridors and access points
- 3) Relationship between buildings, the quality of spaces left between, relation to the street, private spaces and servicing, building orientation (vis-a-vis: sun, wind and view)
- 4) Relation between the project and the immediate (or local) surrounding community, distances to schools, recreation and shopping, an assessment of environmental deficiencies and amenities
- 5) Relationship of the project within its community to the metropolitan area

The projects evaluated were selected on the following basis:

Accessibility (each project was visited by a team of students to determine the actual conditions. The developer and architect were interviewed. The appropriate funding or implementing public agency was questioned where applicable.)

Applicability to the objectives of the study  
(Did the project represent a conscious effort to achieve 'good design', 'cost effectiveness', or the satisfaction of 'special market demands' or public housing needs.)

Range of Type (Did the range of various projects cover a wide variety of housing types. Since basic user-needs would be eventually dealt with in design terms, did the projects represent a variety of user types, building configurations, project size and cost.)

Comparability (Did the selected projects offer enough variety to evaluate varying design standards as effected by construction costs versus rental or purchase price to the ultimate user. What human standards could be considered essential at all costs.)

The projects finally selected and evaluated shared the following characteristics:

Location (The Boston/New Haven region, several international projects were added for limited comparability but not visited)

Category (All the projects selected were essentially housing with varying degrees of small community facilities. Stress was resultantly laid to housing)

Size (The projects finally evaluated represent a range of size from approximately 70 to 1500 dwelling units in varying mixtures from high to low rise configurations)

Density (Densities ranged from a low of about 25 units to the acre to over 175 in intensely urban locations)

Resident Population  
(The projects selected represented the extremes of mixed family type, public housing projects to essentially elderly projects, non-family and affluent projects in urban and suburban locations)

The projects evaluated form the content of The Comparative Housing Study, 1971; are evaluated in terms of the preceeding concepts, and are compared with international standards effecting the quality of housing. Although value judgements were avoided during this essentially research phase, comparisons are implicit in reviewing the composite of international housing standards in the same context with this group of North American regional examples. The basic objective of this first phase was to reach a clearer understanding of the variety of approaches to the design of housing and to have some notion of their comparability to a wide interpretation of standards effecting the ultimate user-need.

### 1.3 HOUSING PROTO-TYPES GENERATED BY USER-NEEDS: PHASE II ( 5 weeks duration)

Students in the 'methods group' reviewed and modified a basic list of 'user-needs' which were derived by the Urban Design students and faculty during the preceeding term.

\* User-needs are general statements with no specific ethnic or racial connotations relegating them to a specific area of society.



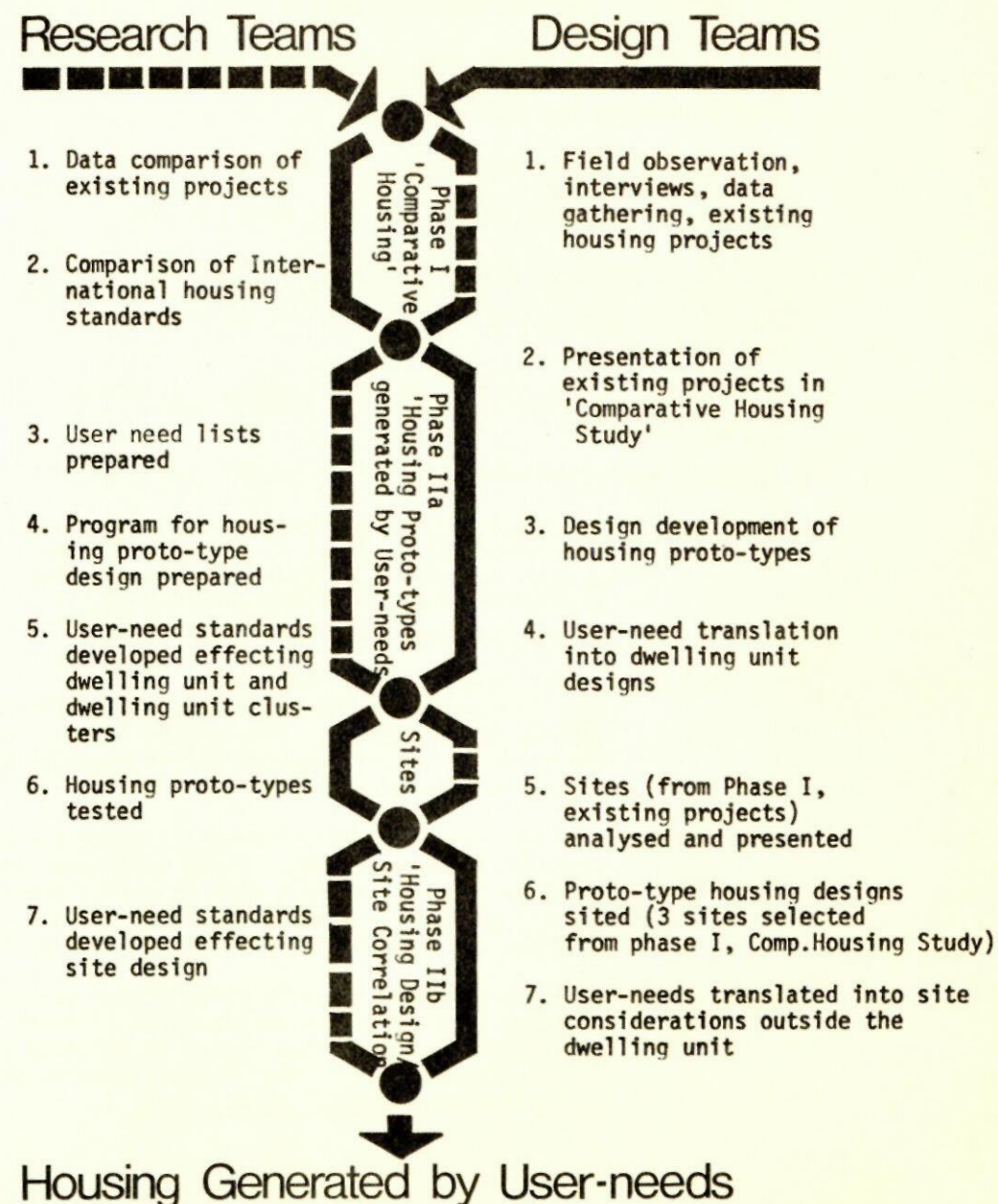
- \* User-needs are categorized by individual or family life-style and age group; for example, children age 0-5, families, singles, etc.
- \* The lists are not complete, but represent a necessarily broad outline effecting most people. Subsequent work in the specification of user-needs was conducted by several students in John Ziesel's class "Sociology and Design".
- \* The user-need lists represent a range of human types and are intended to fit the program for design of housing for a cross-section of users.
- \* Relative weights or ratings are given individual user-needs; the degree of satisfaction of a particular user-need may be scored and given a value, both during and at the end of the design process. A range of both 'hard' and 'soft' factors, subjective as well as quantifiable statements may be included in the same scoring system.

This first phase of design was concerned with generating proto-typical dwelling unit types and building configurations based on primary considerations of the user-need statement lists. Each student design project included all categories and age groups of users with a minimum number of dwelling units set at forty. Each designer chose the project density and particular building type that most interested him, or he was able to evolve a building type. In either case the satisfaction of user-needs was the primary aim.

#### 1.4 METHOD OF APPROACH TO THE PROBLEM: VIEWING THE STUDY AS AN ACADEMIC SYSTEM

The diagrammatic program outline on the facing column represents the organization of students in research and design groups. Two teams of students concerned with methodology, research, schedule and design, alternated with each other in the development of the project. During the first phase of data gathering on existing housing projects, students doing research were backed by students 'designing the program' for phase II, design. During the design phase, the same students who had previously worked in researching existing projects were now translating specific user-need requirements into proto-typical housing designs. Students were not necessarily tied to research or design roles and were encouraged to gain experience on both teams.

The diagram below expresses the general principle of operation and steps taken in the study:





THE HOUSE OF COMMONS

HOUSE OF COMMONS

HOUSE OF COMMONS

HOUSE OF COMMONS

HOUSE OF COMMONS

HOUSE OF COMMONS

HOUSE OF COMMONS

HOUSE OF COMMONS

HOUSE OF COMMONS



## 2a. Comparative housing: existing projects

Prior to translating social and psychological needs into physical form, an understanding of the realities of housing as it exists is essential. The sixteen projects selected for study represent a variety of approaches and life style variants, representing many types of users from public housing tenants to luxury condominium owners. Similar data was collected on each project and is presented in a systematic format. Dwelling unit, building and urban context measures are shown (where possible) fixing not only the size and interrelation of dwelling units, but comparing rent and financial structure of the project as well. The format for data presentation is the same for all projects included. Each project is illustrated in a descending size scale beginning with the individual dwelling unit plan located in relation to community facilities and the metropolitan region and ending with interior plans of discrete dwelling units.

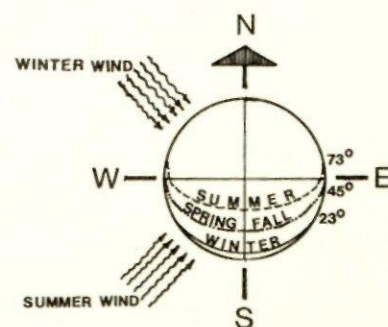
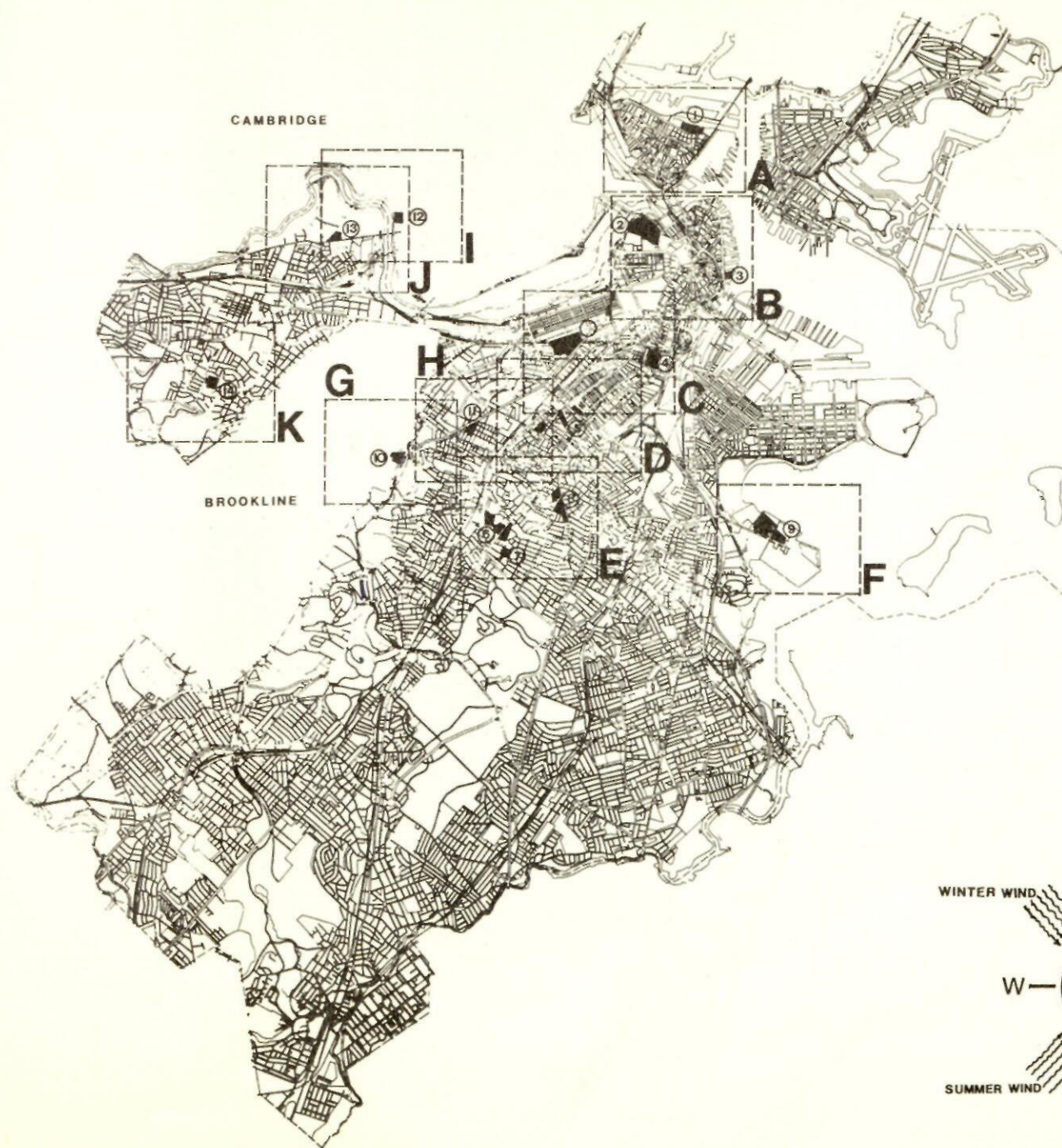
The basic objective of this first phase was to reach a clearer understanding of the variety of approaches to the design of housing and to have some notion of their comparability to a broad interpretation of standards effecting the needs of the ultimate user.

The final element of this section includes a tabulated chart listing comparative international standards. Several nations are included with measures affecting the size, disposition and design of housing as well as community design, and are shown in a comparative format.





# HOUSING PROJECTS IN BOSTON, BROOKLINE, & CAMBRIDGE



0 3200' 6400' 12800' 17200' 23600'

0 1 mile 2 3 4 5 10 miles

## COMPARATIVE HOUSING STUDY

FALL, 1971

MASTER IN ARCHITECTURE CLASS at  
HARVARD GRADUATE SCHOOL OF DESIGN

### HOUSING PROJECTS IN OR NEAR BOSTON

Neighborhood	Name of Projects
A. Charlestown.....	(1) CHARLESNEWTOWN
B. Downtown North.....	(2) CHARLES RIVER PARK
B. Waterfront.....	(3) HARBOR TOWERS
C. South Cove.....	(4) CASTLE SQUARE
D. South End.....	(5) R.O.X.S.E. HOMES
E. Washington Park.....	(6) ACADEMY HOMES I & II
	(7) WESTMINSTER COURT
	(8) WARREN GARDENS
F. Columbia Point.....	(9) COLUMBIA POINT
G. Brookline.....	(10) THE BRROK HOUSE
H. Parker Hill.....	(11) CHARLESBANK APTS
I. Cambridge.....	(12) PEABODY TERRACE
J. Allston, Brighton....	(13) NORTH HARVARD
K. Brighton.....	(14) ULIN HOUSE
Lowell, Mass.....	(15) NORTHERN CANAL

### HOUSING PROJECT IN NEW HAVEN, CONNECTICUT

New Haven, Conn.....(16) CHURCH STREET SOUTH

### HOUSING PROJECTS IN FOREIGN COUNTRIES

Marseilles, France...(17) UNITE D'HABITATION  
Yokohama, Japan.....(18) SAKURADAI COURT  
VILLAGE












# CHARLESTOWN

A

- This neighborhood consists of middle and low income people.
- Within this neighborhood there are two historical elements; Dunker Hill Monument  
USS CONST

## LAND USE (Within 10 min-walk vicinity):

-  Commercial (Local retail & service stores)
-  Business (Retail business & offices)
-  Residential
-  Housing Project Area
-  Industrial
-  Park/Open Space
-  Subway
-  Bus/Trolley
-  Commuter Train

Inner Circle--- 5 min-walk

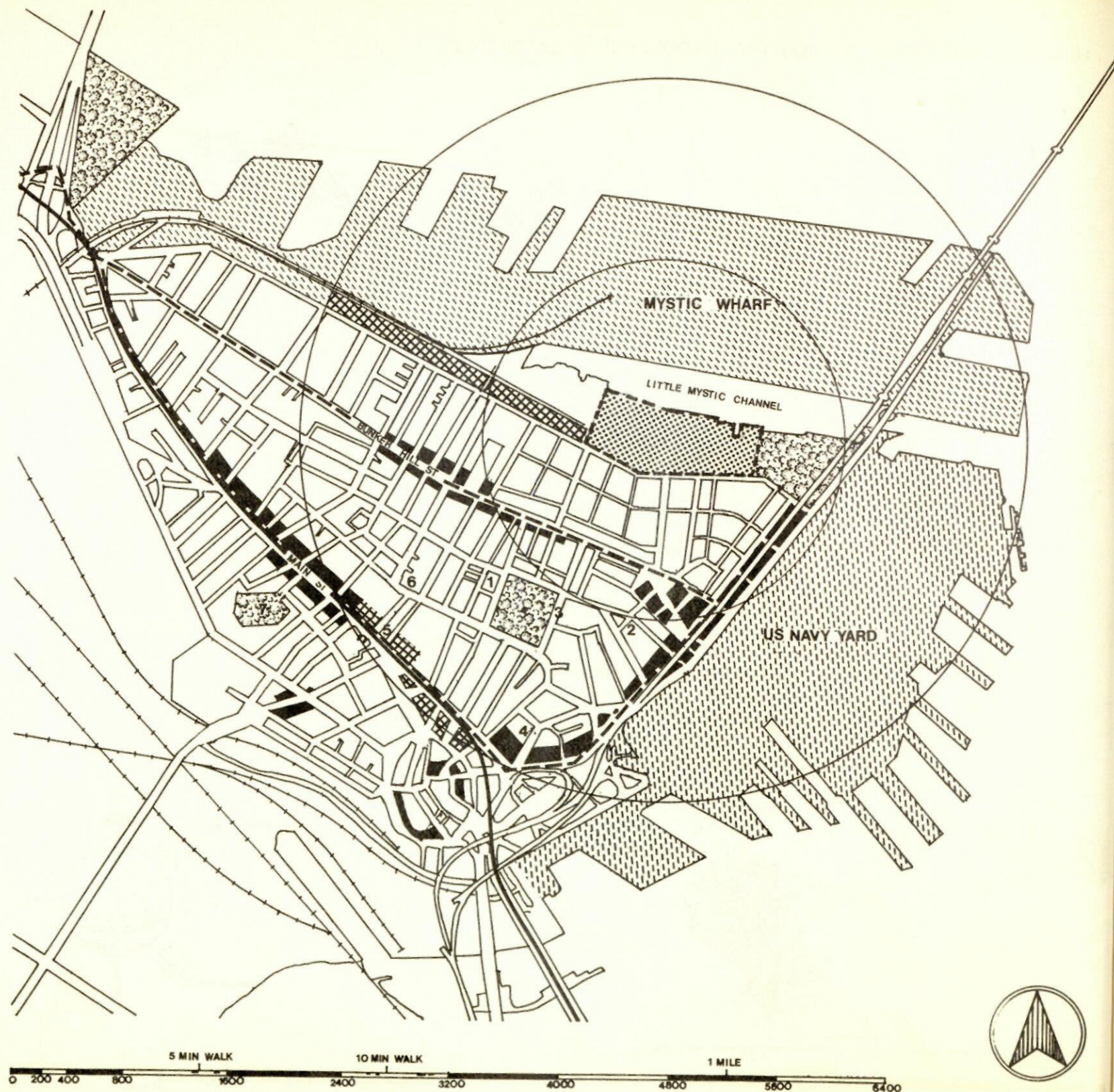
Outer Circle--- 10 min-walk

## NAME OF THE HOUSING PROJECT IN THE NEIGHBORHOOD:

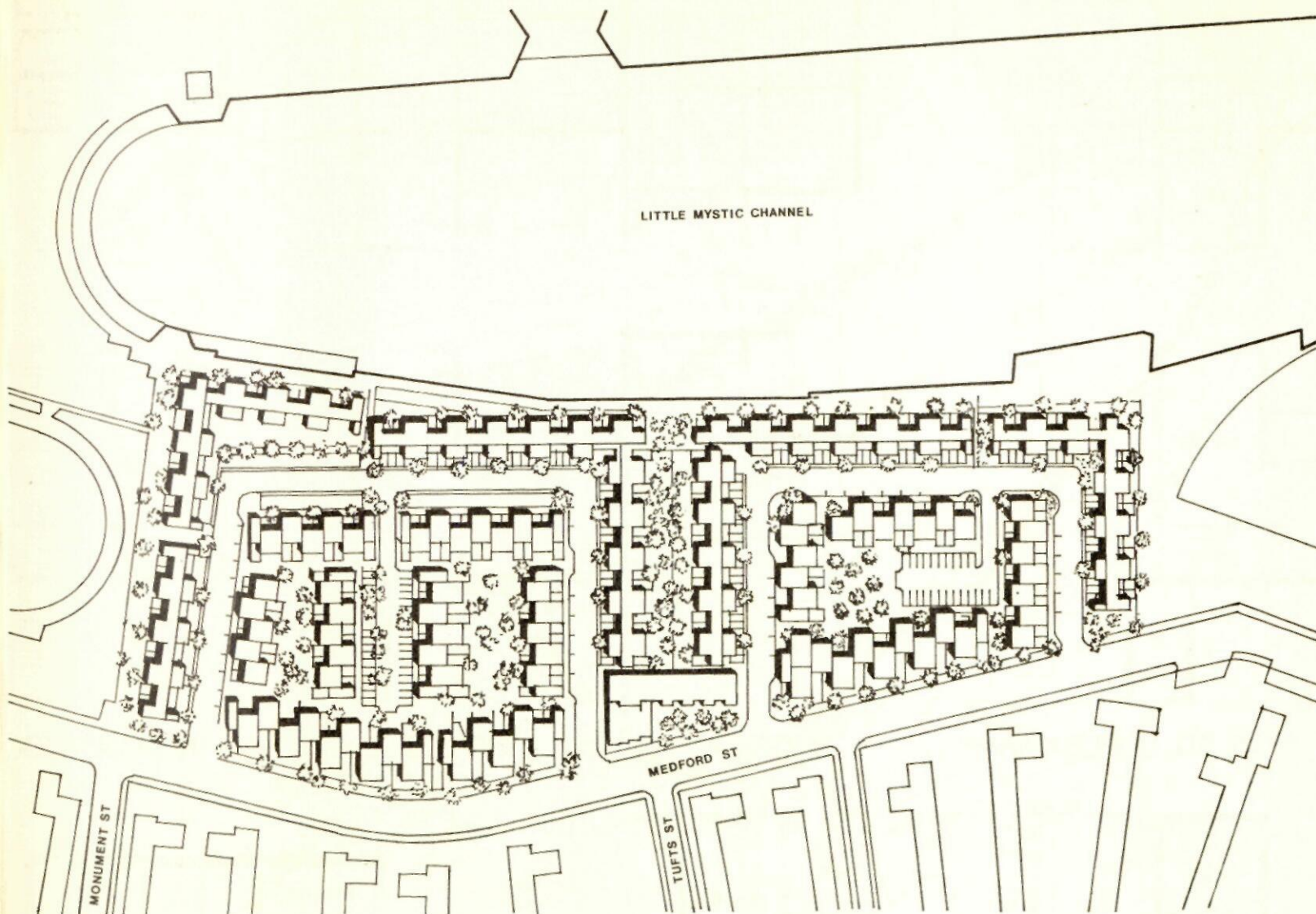
Charles Newtown

## FACILITIES IN THE NEIGHBORHOOD:

- (1) High School
- (2) Elementary School & Junior High School
- (3) Doctors & Dentists Office
- (4) Fire Station
- (5) Library
- (6) Massachusetts General Clinics
- (7) Cemetery







## CHARLESNEWTOWN

Address: Medford St, Charlestown

Architect: Sert, Jackson & Associates Inc.

Owner: Coop

Date of Completion: Summer, 1971

### SITE CHARACTERISTICS:

Total Site Area.....7.7 acre  
 Total Building Coverage.....42,000 s.f.  
 Bldg.Coverage / Site Area.....13.2 %  
 People / Acre.....105  
 Dwelling Unit / Acre.....34  
 Parking: Structure.....none  
           On Grade.....53,000 s.f.  
 Parking / Dwelling Unit.....1/1  
 Open Space: For People.....100,000 s.f.  
                   For Auto.....30,000 s.f.

### FACILITIES ON THE SITE:

( ) -- Nursery  
 (X) -- Daycare Center  
 ( ) -- Doctors/Dentists  
 (X) -- Grocery Store  
 (X) -- Playground  
 ( ) -- Tennis Court  
 ( ) -- Basketball Court  
 ( ) -- Swimming Pool  
 (X) -- Community Hall

### BUILDING TYPES ON THE SITE:

(A) Tower ( stories)..... none  
 (B) Slab ( stories)..... none  
 (C) Walkup ( 4 stories)..... 164  
 (D) Row ..... 86  
 (E) Other ( 3 stories)..... 1 Commercial Bldg.

### PEOPLE:

White..... n.a.%  
 Non-White..... n.a.%  
 Income Groups: Welfare -- % Low -- % n.a.  
                   Middle -- % High -- %

### ECONOMICS:

Total Project Cost.....\$ 4,500,000  
 Cost per sq.ft.....\$ 13.84  
 Maintenance per year or month..not available  
 Amortization Period.....40 years  
 Financing.....FHA 221 (d)3  
 Vacancy Rate.....0 %  
 Turnover Rate.....not established yet



# CHARLESNEWTOWN

Address: Medford St, Charlestown

Architect: Sert, Jackson & Associates Inc.

Owner: Coop

Date of Completion: Summer, 1971

TYPE OF BUILDING: Walk-up & Row

INCOME: Low

## BUILDING CHARACTERISTICS:

Gross Building Area.....330,000 s.f.

Net Usable Area.....264,000 s.f.

Efficiency Index(Usable/Gross Bldg).....80 %

Types of Dwelling Unit in the Building:

Efficiency	-- units	3-BR	113 units
1-BR	19 units	4-BR	32 units
2-BR	98 units	5-BR	-- units

Structural: Steel Frame with Brick / Wood Frame

Mechanical: Hot Water Heating

Services: Laundry

Building Regulations: none

## DWELLING UNIT CHARACTERISTICS:

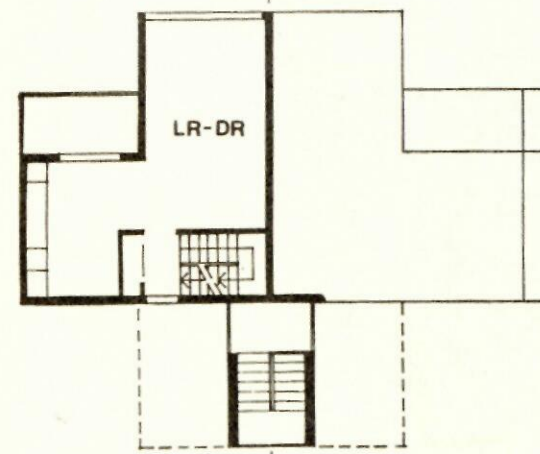
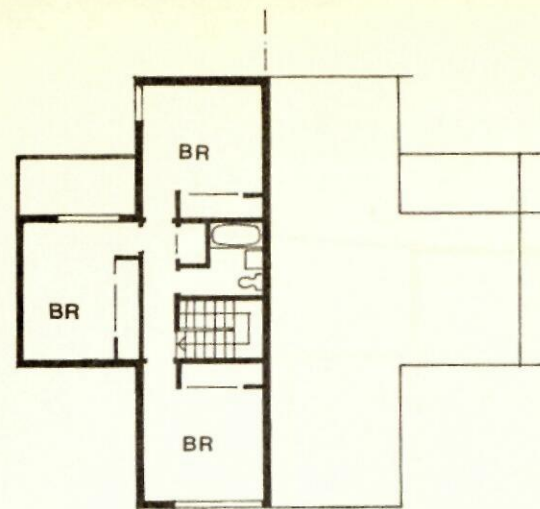
Type of DU	Eff.	1-BR	2-BR	3-BR	4-BR	5-BR
BALCONY		--	70.0	70.0	130.0	
LR		290.0	168.0	168.0	100.0	
DR			90.0	90.0	90.0	
K		70.0	140.0	140.0	165.0	
BR 1		182.0	154.0	156.0	96.0	
BR 2		--	168.0	156.0	132.0	
BR 3		--	--	143.0	121.0	
BR 4		--	--	--	121.0	
BR 5		--	--	--	--	
Net Lvg		542.0	790.0	923.0	955.0	
BATH		54.0	54.0	54.0	80.0	
STORAGE		45.0	50.0	66.0	80.0	
OTHERS		--	60.0	60.0	40.0	
Gross Unit		641.0	954.0	1103.0	1155.0	
Net L/G.U.		87 %	84 %	84 %	82 %	
Rent/month		\$120- 126	\$140- 146	\$163- 171	\$188	

Any extra rent for

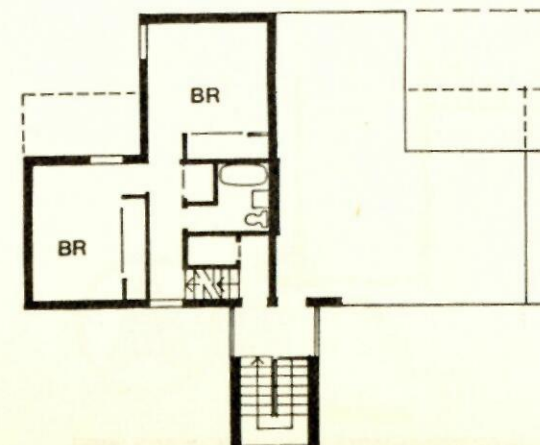
Parking..... none

Recreational Facilities... none

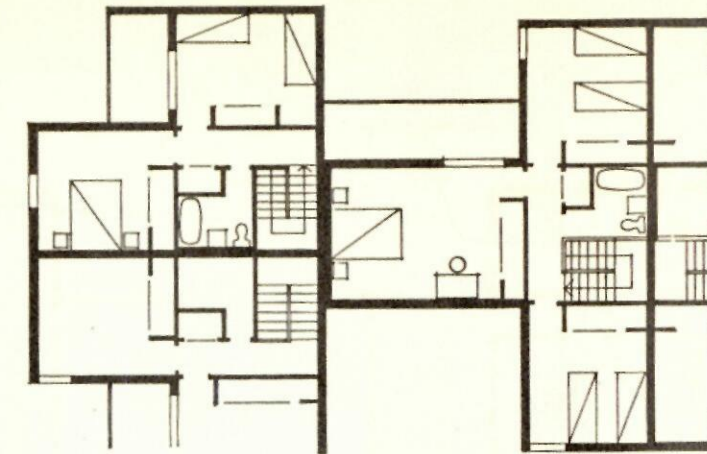
## REMARKS:



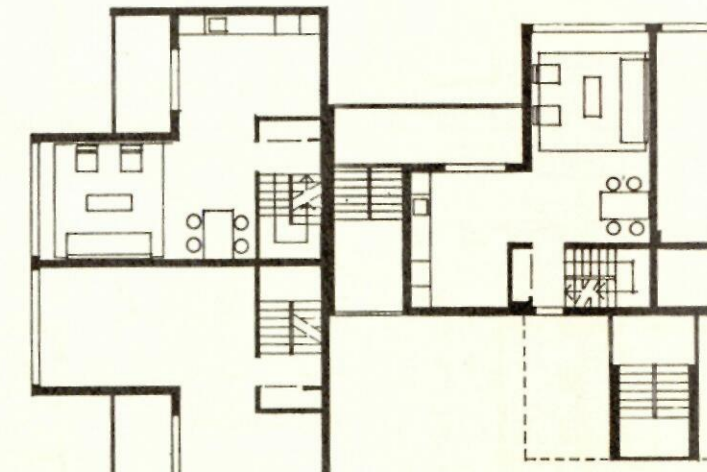
3 BR DUPLEX



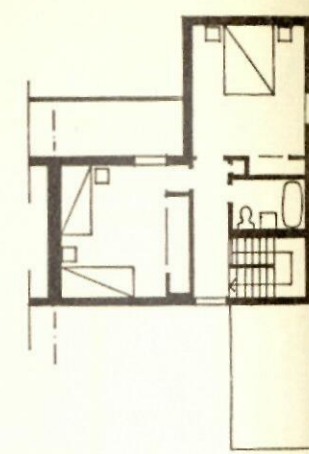
2 BR DUPLEX



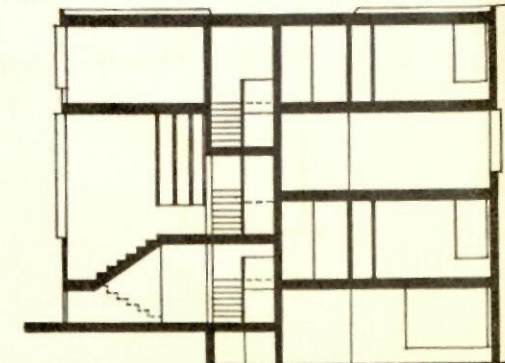
2 BR DUPLEX



3 BR DUPLEX



2 BR DUPLEX



SECTION



# CHARLESNEWTOWN

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Architect: Sert, Jackson & Associates Inc.

Owner: Coop

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INCOME: Low

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Net Usable Area..... 264,000 s.f.  
Efficiency Index(Usable/Gross Bldg)..... 80 %

Types of Dwelling Unit in the Building:

Efficiency	-- units	3-BR	113 units
1-BR	19 units	4-BR	32 units
2-BR	98 units	5-BR	-- units

Structural: Steel Frame with Brick / Wood Frame

Mechanical: Hot Water Heating

Services: Laundry

Building Regulations: none

## DWELLING UNIT CHARACTERISTICS:

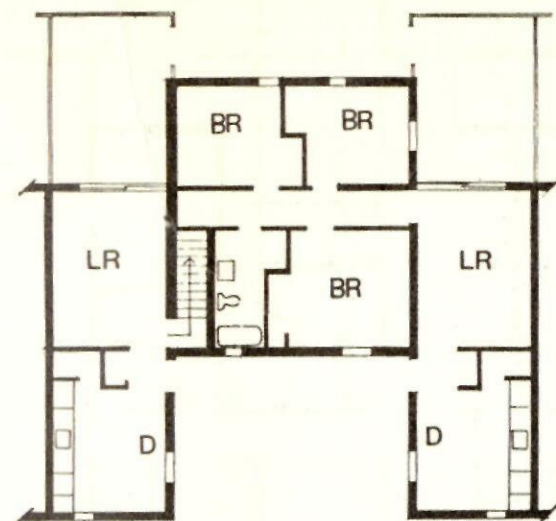
Type of DU	Eff.	1-BR	2-BR	3-BR	4-BR	5-BR
BALCONY		--	70.0	70.0	130.0	
LR		290.0	168.0	168.0	100.0	
DR			90.0	90.0	90.0	
K		70.0	140.0	140.0	165.0	
BR 1		182.0	154.0	156.0	96.0	
BR 2		--	168.0	156.0	132.0	
BR 3		--	--	143.0	121.0	
BR 4		--	--	--	121.0	
BR 5		--	--	--	--	
Net Lvg		542.0	720.0	923.0	955.0	
BATH		54.0	54.0	54.0	80.0	
STORAGE		45.0	50.0	66.0	80.0	
OTHERS		--	60.0	60.0	40.0	
Gross Unit		641.0	954.0	1103.0	1155.0	
Net L/G.U.		87 %	84 %	84 %	82 %	
Rent/month		\$120- 126	\$140- 146	\$163- 171	\$188	

Any extra rent for

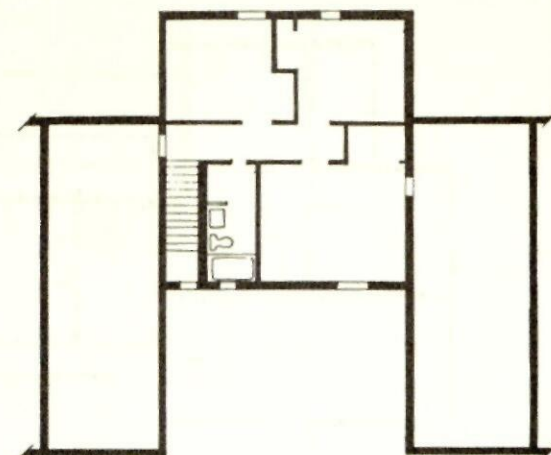
Parking..... none

Recreational Facilities... none

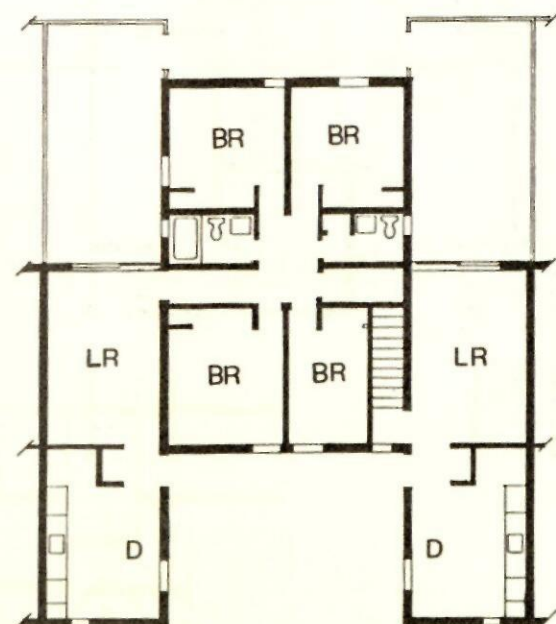
REMARKS:



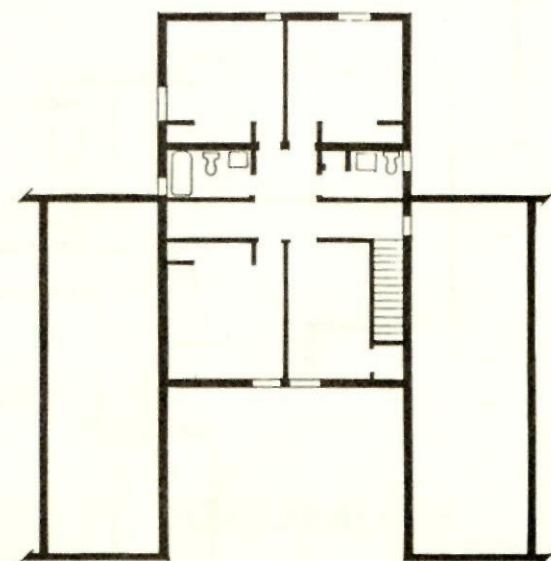
3BR APT



3BR DUPLEX



4BR APT



4BR DUPLEX

0 5 10



# CHARLESNEWTOWN

Address: Medford St, Charlestown

Architect: Sert, Jackson & Associates

Owner: Coop

Date of Completion: Summer, 1971

TYPE OF BUILDING: Walk-un

INCOME: Low

## BUILDING CHARACTERISTICS:

Gross Building Area.....230,000 s.f.

Net Usable Area.....184,000 s.f.

Efficiency Index(Usable/Gross Bldg).....80 %

Types of Dwelling Unit in the Building:

Efficiency --	units	3-BR	units
1-BR	units	4-BR	units
2-BR	units	5-BR	-- units

Structural: Steel with In-Fill Brick

Mechanical: Hot Water Heating

Services: Laundry

Building Regulations: none

## DWELLING UNIT CHARACTERISTICS:

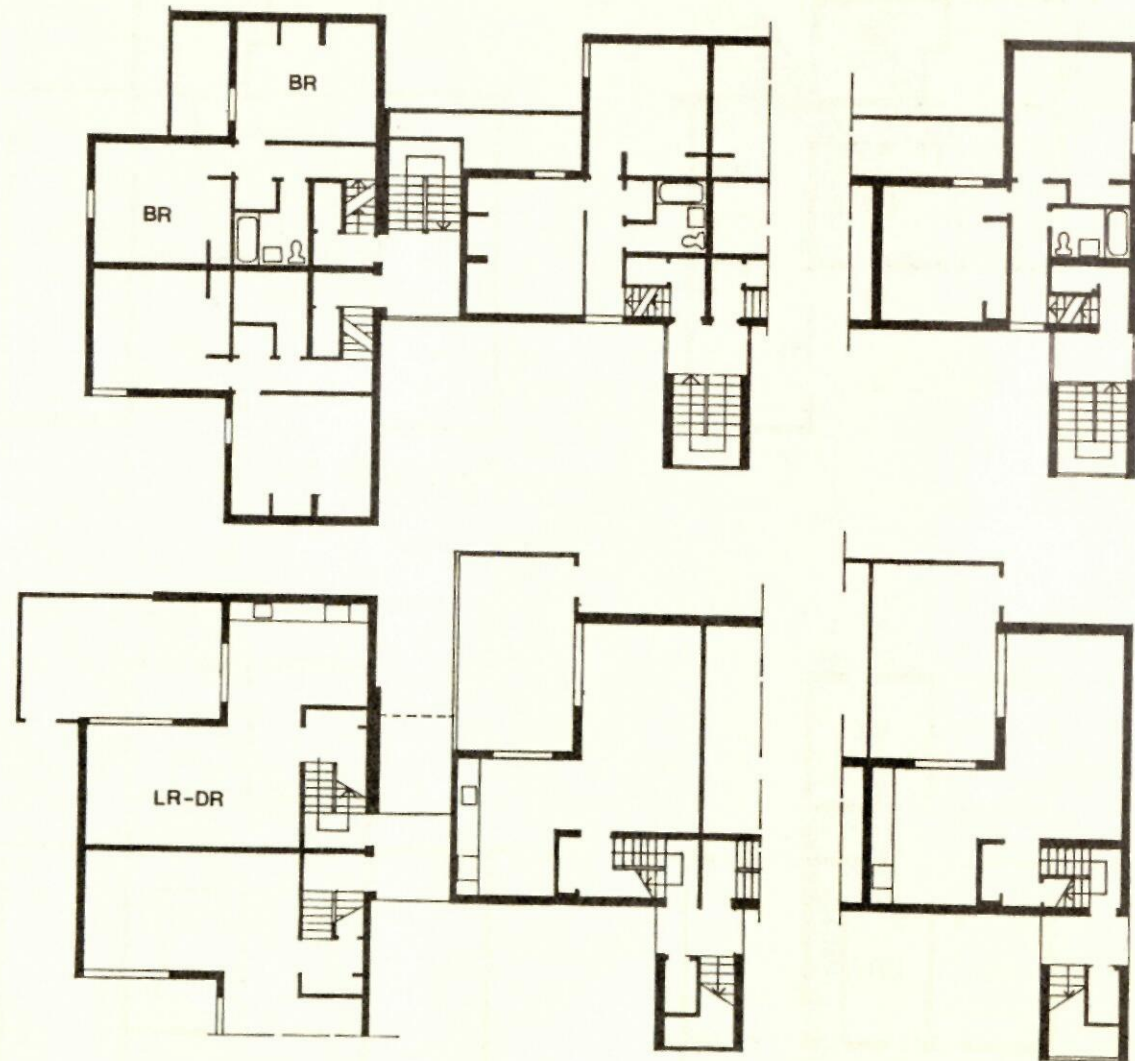
Type of DU	Eff.	1-BR	2-BR	3-BR	4-BR	5-BR
BALCONY		91.0	70.0	70.0	130.0	
LR		290.0	168.0	168.0	100.0	
DR			90.0	90.0	90.0	
K		70.0	140.0	140.0	165.0	
BR 1		132.0	154.0	156.0	96.0	
BR 2		--	168.0	156.0	132.0	
BR 3		--	--	143.0	121.0	
BR 4		--	--	--	121.0	
BR 5		--	--	--	--	
Net Lvg		633.0	790.0	923.0	955.0	
BATH		54.0	54.0	54.0	80.0	
STORAGE		45.0	50.0	66.0	80.0	
OTHERS		--	60.0	60.0	40.0	
Gross Unit		732.0	954.0	1103.0	1155.0	
Net L/G.U.		87 %	84 %	84 %	82 %	
Rent/month		\$120- 126	\$140- 146	\$163- 171	\$177	

Any extra rent for

Parking..... none

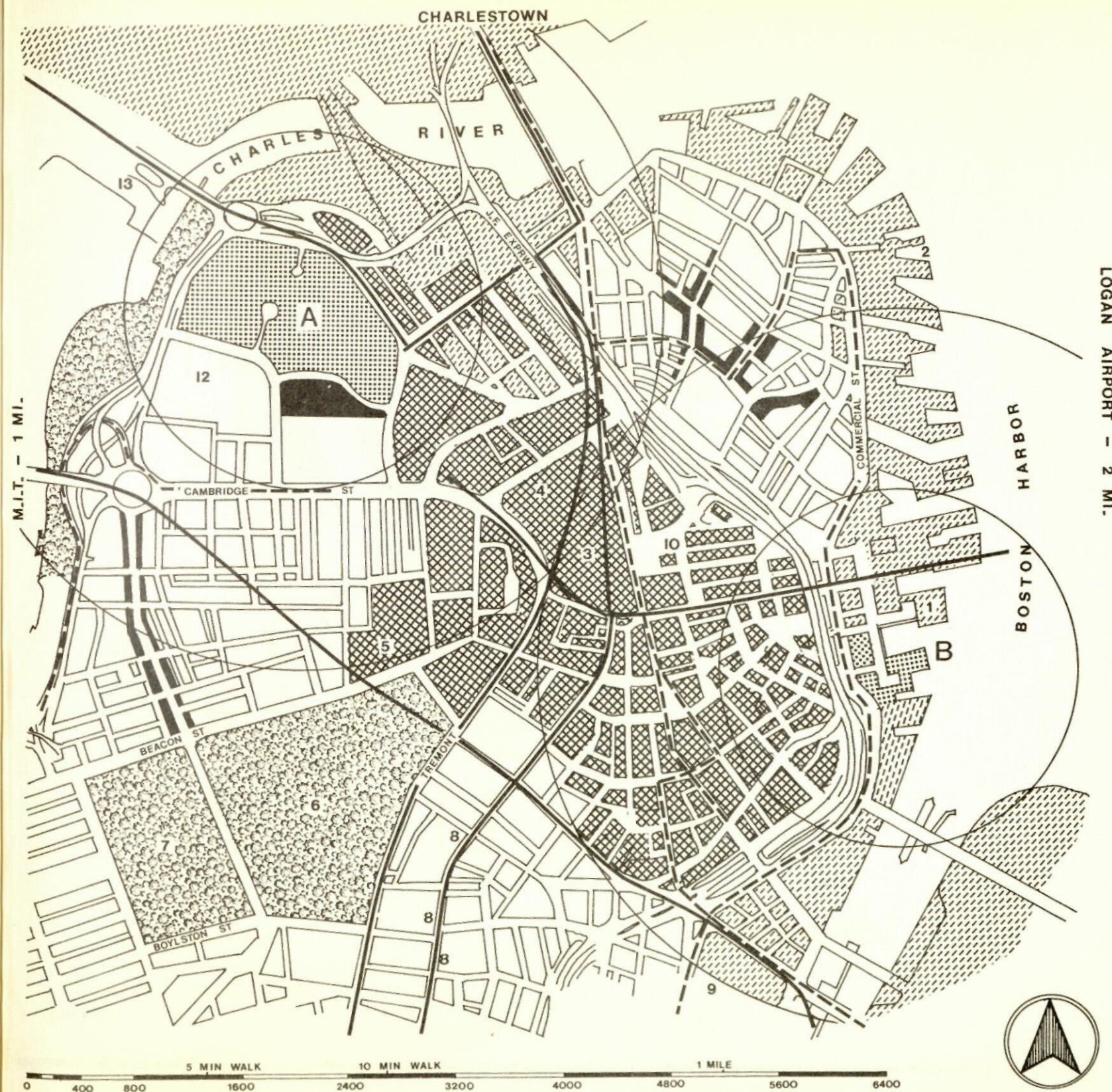
Recreational Facilities... none

## REMARKS:



2 BR DUPLEXES





## DOWNTOWN N. - WATERFRONT B

- Downtown North: Amidst much controversy, a major renewal effort transformed this area in the early 1960's from a static low income, ethnic neighborhood to an upper-middle income residential area. Additional apartment towers are planned for future implementation along the direction of the existing structures.
- Waterfront: This neighborhood is composed of commercial piers of Boston Harbor and seafood center. The area is presently undergoing considerable redevelopment which will introduce more residential units along the waterfront.

### LAND USE (within 10 min-walk vicinity)

- Commercial (Local retail & service stores)
- Business (Retail business & offices)
- Residential
- Housing Project Area
- Industrial
- Park/Open Space
- Subway
- Bus/Trolley
- Commuter Train

Inner Circle--- 5 min-walk  
Outer Circle--- 10 min-walk

### NAME OF THE HOUSING PROJECTS IN THE NEIGHBORHOOD:

Charles River Park.....(A)  
Harbor Towers.....(B)

### FACILITIES IN THE NEIGHBORHOOD:

- (1) Aquarium
- (2) Fire Boat Pier
- (3) New Boston City Hall
- (4) Government Center
- (5) New State House
- (6) Boston Common
- (7) Boston Public Garden
- (8) Downtown Shopping Area
- (9) South Station
- (10) Heymarket Area
- (11) North Station
- (12) Mass General Hospital
- (13) Science Museum



# CHARLES RIVER PARK

Address: Charles St & Cambridge St, Downtown North

Architect: Victor Gruen

Owner: not available

Date of Completion: 1962

## SITE CHARACTERISTICS:

Total Site Area..... 10.5 acre  
 Total Building Coverage.....86,120 s.f.  
 Bldg.Coverage / Site Area.....20 %  
 People / Acre.....not avail  
 Dwelling Unit / Acre.....not avail  
 Parking: Structure.....not avail  
       On Grade.....  
 Parking / Dwelling Unit.....not avail  
 Open Space: For People.....20,000 s.f.  
               For Auto.....98,700 s.f.

## FACILITIES ON THE SITE:

( )-- Nursery  
 ( )-- Daycare Center  
 ( )-- Doctors/Dentists  
 ( )-- Grocery Store  
 (X)-- Playground  
 (X)-- Tennis Court  
 ( )-- Basketball Court  
 (X)-- Swimming Pool  
 ( )-- Community Hall

## BUILDING TYPES ON THE SITE:

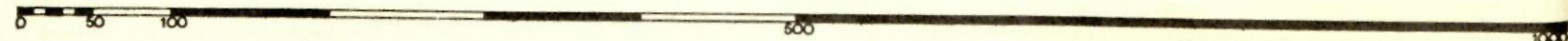
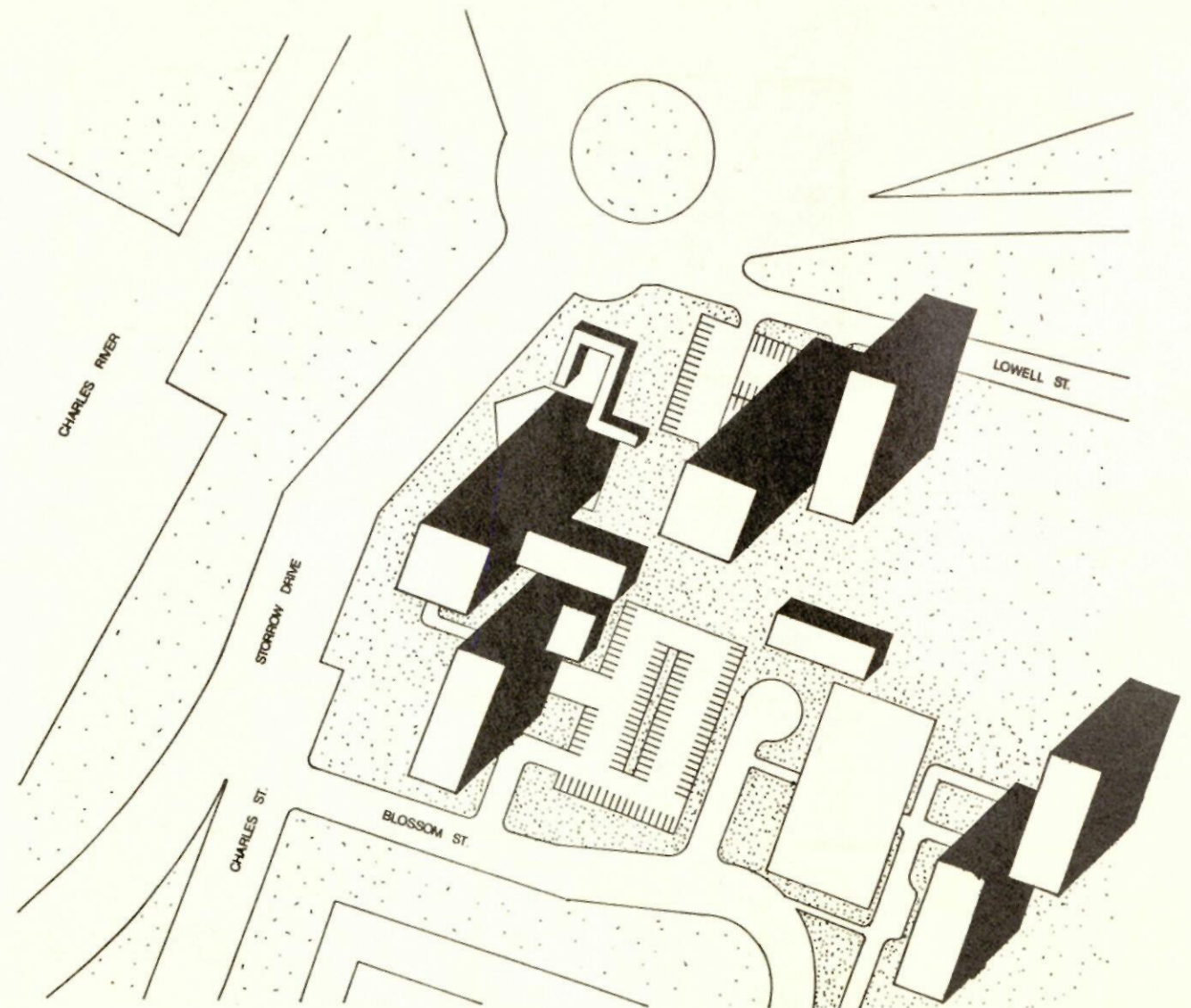
(A) Tower (23 stories)..... 2  
 (B) Slab (16 stories)..... 4  
 (C) Walkup (3-4 stories)..... 2  
 (D) Row..... none  
 (E) Other..... none

## PEOPLE:

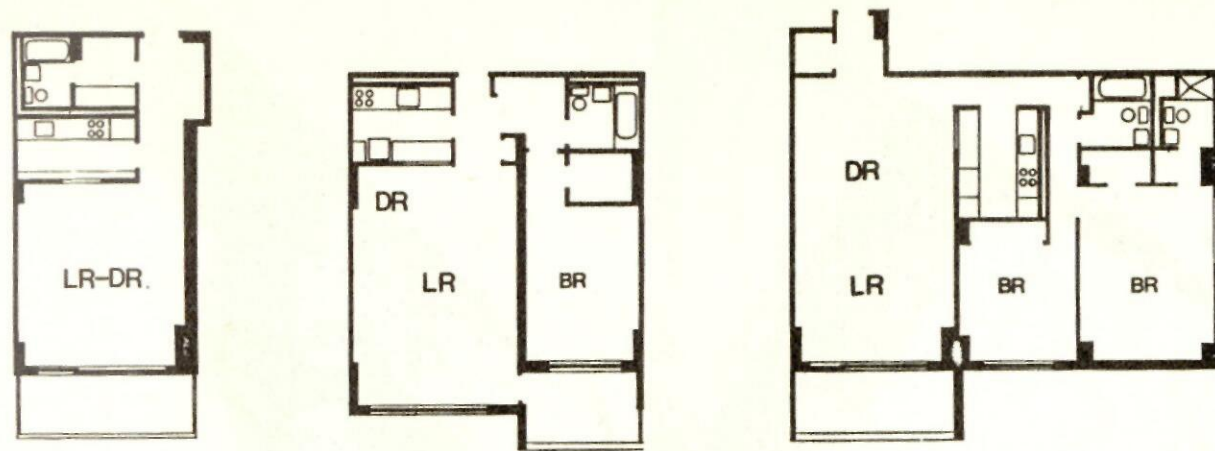
White..... n.a. %  
 Non-White..... n.a. %  
 Income Groups: Welfare -- % Low -- %  
                   Middle -- % High 100%

## ECONOMICS:

Total Project Cost.....\$ 25,000,000  
 Cost per sq.ft.....not available  
 Maintenance per year or month.....not available  
 Amortization Period.....40 years  
 Financing.....FHA  
 Vacancy Rate.....3-8%  
 Turnover Rate.....10 %



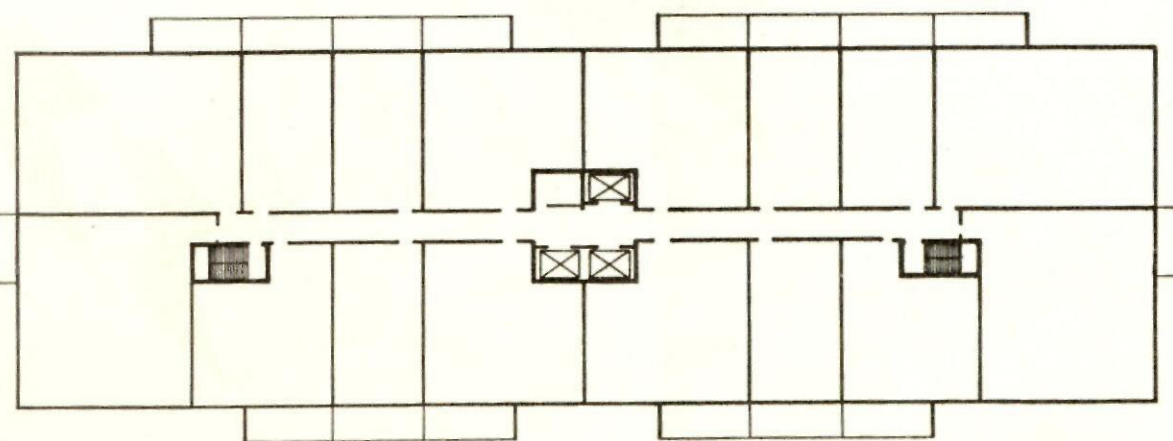




EFF UNIT

1 BR UNIT

2 BR UNIT



UNIT BLOCK

# CHARLES RIVER PARK

Address: Charles St & Cambridge St, Downtown North

Architect: Victor Gruen

Owner: not available

Date of Completion: 1962

TYPE OF BUILDING: Slab & Walk-up

INCOME: High

## BUILDING CHARACTERISTICS:

Gross Building Area.....1,025,000 s.f.  
 Net Usable Area..... 866,000 s.f.  
 Efficiency Index(Usable/Gross Bldg)..... 86 %

### Types of Dwelling Unit in the Building:

Efficiency	202 units	3-BR	22 units
1-BR	424 units	4-BR	-- units
2-BR	274 units	5-BR	-- units

Structural: Reinforced Concrete Frame

Mechanical: Central Heating and Air Conditioning

Services: Laundry, Incinerator

Building Regulations: none

## DWELLING UNIT CHARACTERISTICS:

Type of DU	Eff.	1-BR	2-BR	3-BR	4-BR	5-BR
BALCONY	--	77.0	48.0			
LR	238.0	368.0	448.0			
DR	(Combined with LR)					
K	72.0	75.0	75.0			
BR 1	--	165.0	121.0			
BR 2	--	--	221.0			
BR 3	--	--	--			
BR 4	--	--	--			
BR 5	--	--	--			
Net Lvg	310.0	685.0	913.0			
BATH	35.0	35.0	70.0			
STORAGE	28.0	44.0	72.0			
OTHERS	--	--	--			
Gross Unit	530.0	950.0	1196.0			
Net L/G.U.	59 %	72 %	79 %			
Rent/month	\$200-240	\$260-335	\$325-400			

Any extra rent for

Parking.....\$ 30/month  
 Recreational Facilities...\$ 100-600 for pool  
 \$ 60 for tennis court

REMARKS:



## HARBOR TOWERS

Address: India Street at India Wharf

Architect: I.M. Pei

Owner: Berenson Corporation (Management)

Date of Completion: Not completed yet

### SITE CHARACTERISTICS:

Total Site Area.....7.9 acre  
Total Building Coverage.....19,850 s.f.  
Bldg. Coverage / Site Area.....59.2 %  
People / Acre.....184  
Dwelling Unit / Acre.....91.2  
Parking: Structure.....57,178 s.f.  
On Grade.....none  
Parking / Dwelling Unit.....2/1  
Open Space: For People.....7,200 s.f.  
For Auto.....62,000 s.f.

### FACILITIES ON THE SITE:

(X)-- Nursery  
( )-- Daycare Center  
(X)-- Doctors/Dentists  
(X)-- Grocery Store  
(X)-- Playground  
(X)-- Tennis Court  
( )-- Basketball Court  
(X)-- Swimming Pool  
( )-- Community Hall

### BUILDING TYPES ON THE SITE:

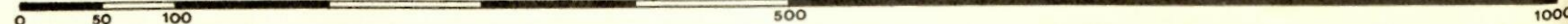
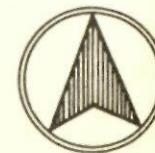
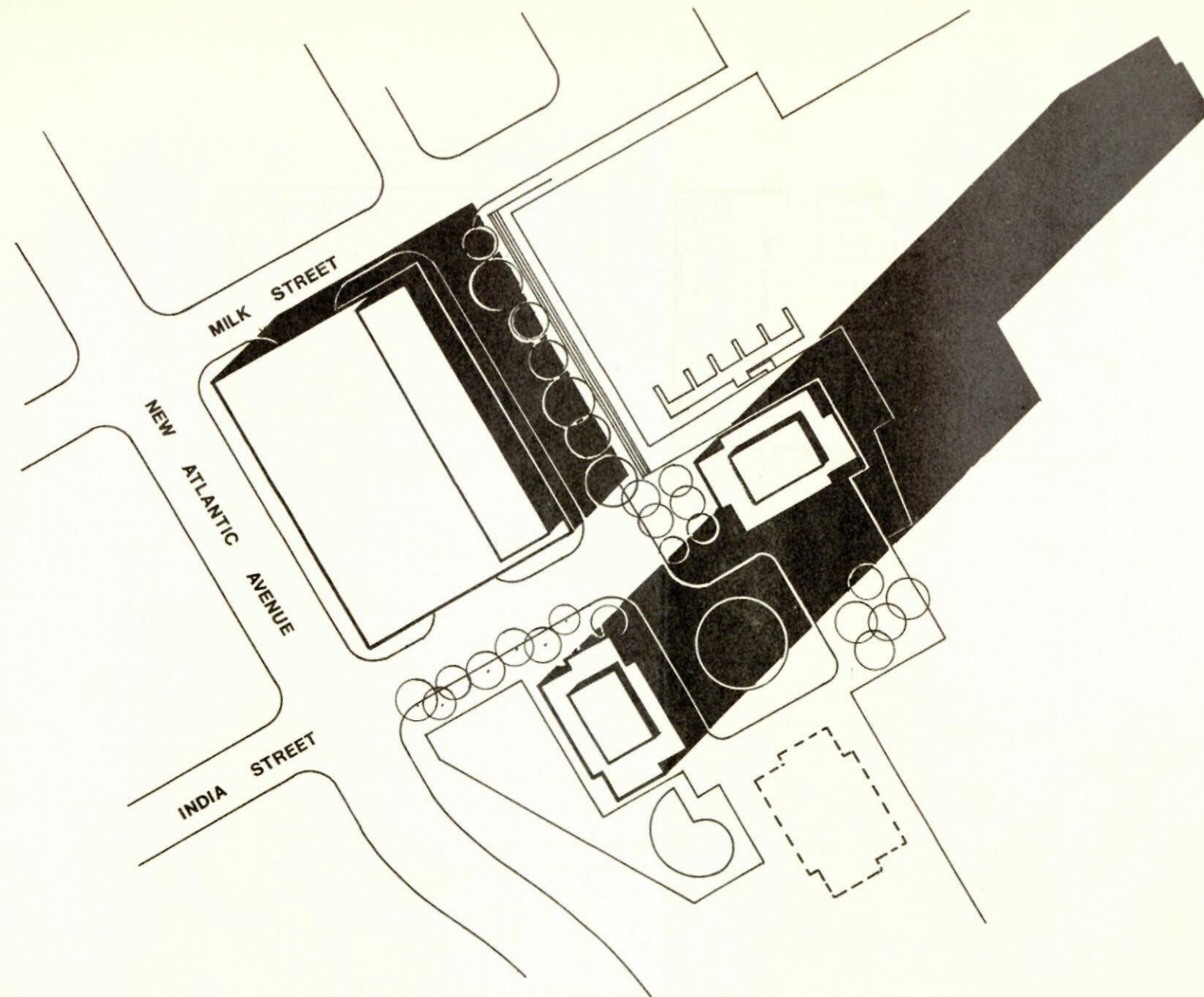
(A) Tower (40 stories).... 2  
(B) Slab ( stories).... none  
(C) Walkup ( stories).... none  
(D) Row..... none  
(E) Other..... none

### PEOPLE:

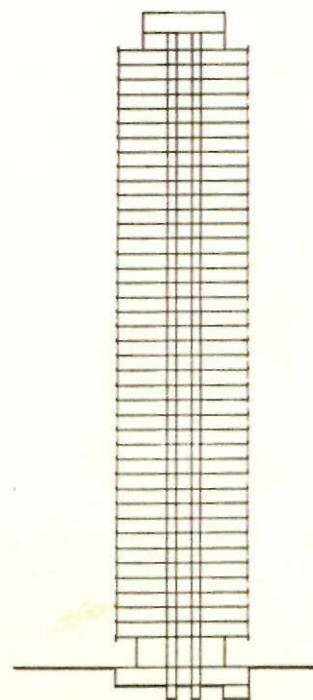
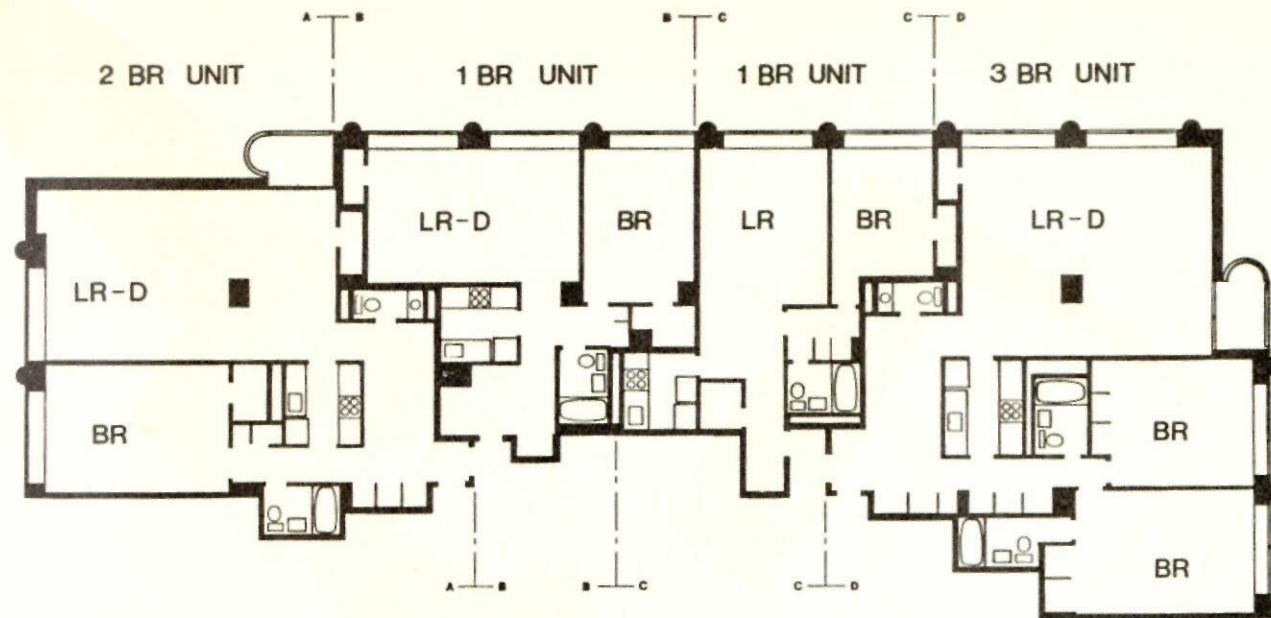
White..... 98 %  
Non-White..... 2 %  
Income Groups: Welfare -- % Low -- %  
Middle 32 % High 68 %

### ECONOMICS:

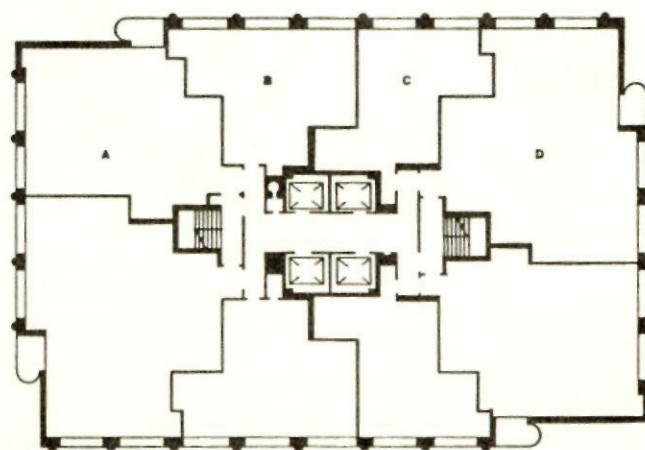
Total Project Cost.(est.).....\$ 20,000,000(w/o land)  
Cost per sq.ft.....\$ 19.20/s.f.  
Maintenance per year or month..Not established yet  
Amortization Period.....  
Financing.....FHA 220  
Vacancy Rate.....Not established yet  
Turnover Rate.....Not established yet  
Property Tax.....\$ 105,694/yr







SECTION



TYPICAL FLOOR



## HARBOR TOWERS

Address: India Street at India Wharf

Architect: I. M. Pei

Owner: Berenson Corporation (Management)

Date of Completion: Not completed yet

TYPE OF BUILDING: Tower

INCOME: High

### BUILDING CHARACTERISTICS:

Gross Building Area.....798,000 s.f.

Net Usable Area.....717,600 s.f.

Efficiency Index(Usable/Gross Bldg)..... 89 %

Types of Dwelling Unit in the Building:

Efficiency -- units 3-BR 156 units

1-BR 312 units 4-BR -- units

2-BR 156 units 5-BR -- units

Structural: Poured-in-place Concrete

Mechanical: Central Heating & A.C. (Steam from  
Con Edison is used)

Services: Doorman, Laundry, Incinerator

Building Regulations:

### DWELLING UNIT CHARACTERISTICS:

Type of DU	1-BR(1)	1-BR(2)	2-BR	3-BR	4-BR	5-BR
BALCONY	--	--	20.0	20.0		
LR	314.0	259.0	326.0	326.5		
DR	(Combined with LR-----)					
K	60.0	64.0	61.5	71.5		
BR 1	198.0	155.0	131.0	207.0		
BR 2	--	--	247.0	247.0		
BR 3	--	--	--	182.5		
BR 4	--	--	--	--		
BR 5	--	--	--	--		
Net Lvg	572.0	478.0	785.5	1054.5		
BATH	35.0	35.0	56.0	98.5		
STORAGE	63.0	52.0	57.0	82.0		
OTHEPS	138.0	100.0	217.0	242.0		
Gross Unit	808.0	665.0	1115.5	1477.0		
Net L/G.U.	71 %	72 %	71 %	72 %		
Rent/month	\$285- 525	\$285- 525	\$525- 725	\$725- 1000		

Any extra rent for

Parking.....

Recreational Facilities...

REMARKS:












## BACKBAY - SOUTH COVE

C

- The Backbay District in Boston Downtown area is composed of business and high income residential areas. The Prudential Towers are located in the business area and occupied by high income people.
- South Cove is a low income neighborhood of primarily Chinese people. Chinatown is located a few blocks north of this neighborhood. The area east of the Castle Square Project is a large industrial area and the area northwest of the Project is the Backbay District.

### LAND USE (within 10 min-walk vicinity):

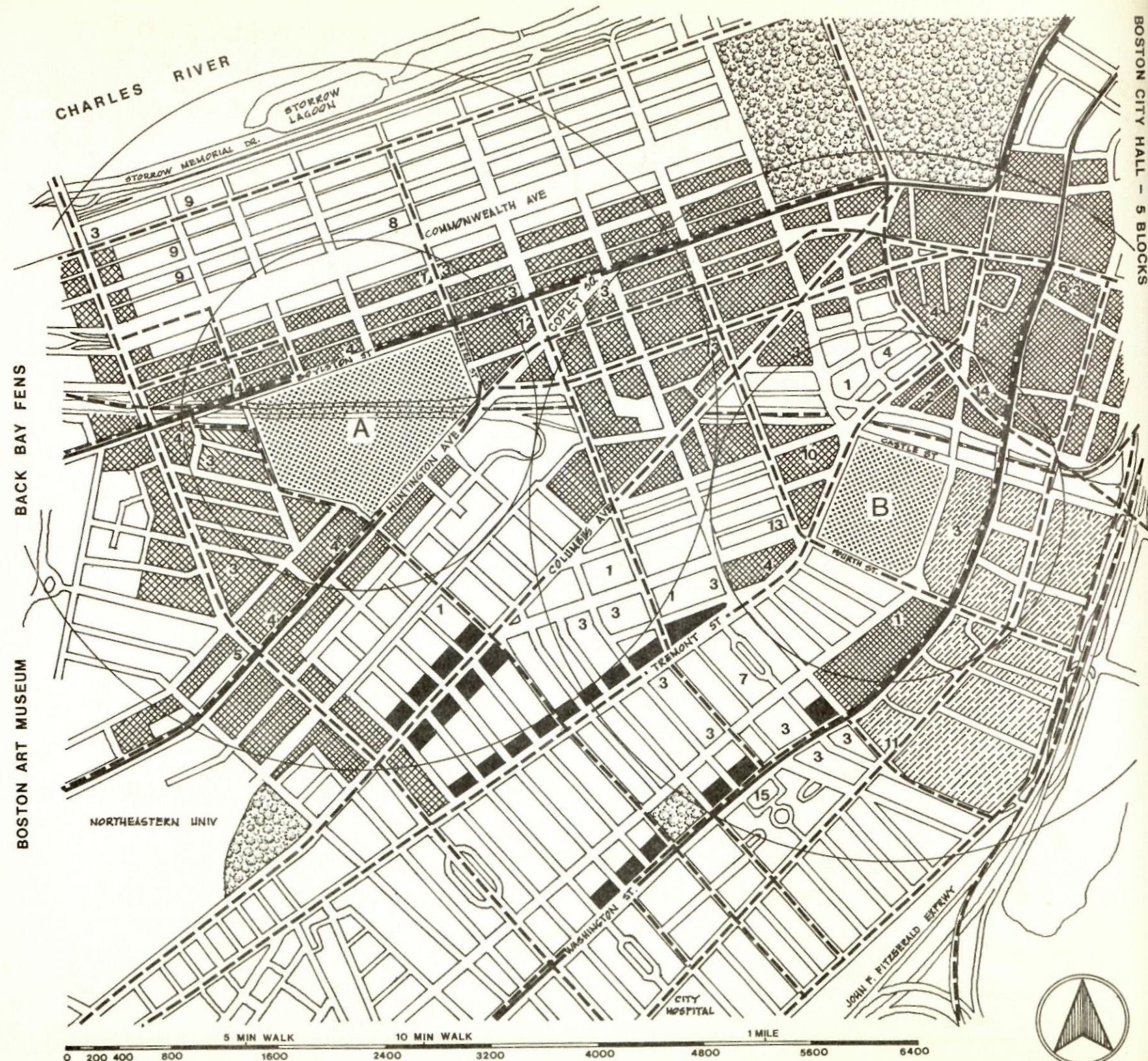
-  Commercial (Local retail & service stores)
-  Business (Retail business & offices)
-  Residential
-  Housing Project Area
-  Industrial
-  Park/Open Space
-  Subway
-  Bus/Trolley
-  Commuter Train
- Inner Circle----- 5 min-walk
- Outer Circle----- 10 min-walk

### NAME OF THE HOUSING PROJECTS IN THE NEIGHBORHOOD:

- Prudential Towers.....(A) Information not avail.  
Castle Square.....(B)

### FACILITIES IN THE NEIGHBORHOOD:

- (1) Primary and Secondary School
- (2) Day Nursery
- (3) Church
- (4) Theater/Cinema
- (5) Music Hall
- (6) Medical Center
- (7) Hospital
- (8) Clinics
- (9) Doctor's Office
- (10) Animal Hospital
- (11) Shopping Center
- (12) Library
- (13) Police
- (14) Fire Dept
- (15) Post Office









# CASTLE SQUARE

Address: 500 South End, Boston

Architect: Samuel Glaser

Owner: The Drucker Company

Date of Completion: Summer, 1967

TYPE OF BUILDING: Slab

INCOME: Low

## BUILDING CHARACTERISTICS:

Gross Building Area.....354,500 s.f.

Net Usable Area.....287,100 s.f.

Efficiency Index(Usable/Gross Bldg)..... 81.0 %

Types of Dwelling Unit in the Building:

Efficiency	33 units	3-BR	-- units
1-BR	202 units	4-BR	-- units
2-BR	48 units	5-BR	-- units

Structural: Reinforced Concrete

Mechanical: Forced Hot Water Heating

Services: Laundry

Building Regulations: none

## DWELLING UNIT CHARACTERISTICS:

Type of DU	Eff.	1-BR	2-BR	3-BR	4-BR	5-BR
BALCONY		--	--			
LR		221.0	208.0			
DR		(Comb w/ LR)				
K		63.0	66.0			
BR 1		133.0	139.0			
BR 2		--	112.0			
BR 3		--	--			
BR 4		--	--			
BR 5		--	--			
Net Lvg		417.0	525.0			
BATH		41.0	39.0			
STORAGE		45.0	20.0			
OTHERS		21.0	24.0			
Gross Unit		524.0	608.0			
Net L/G.U.		79 %	86 %			
Rent/month		\$ 116	\$ 131			

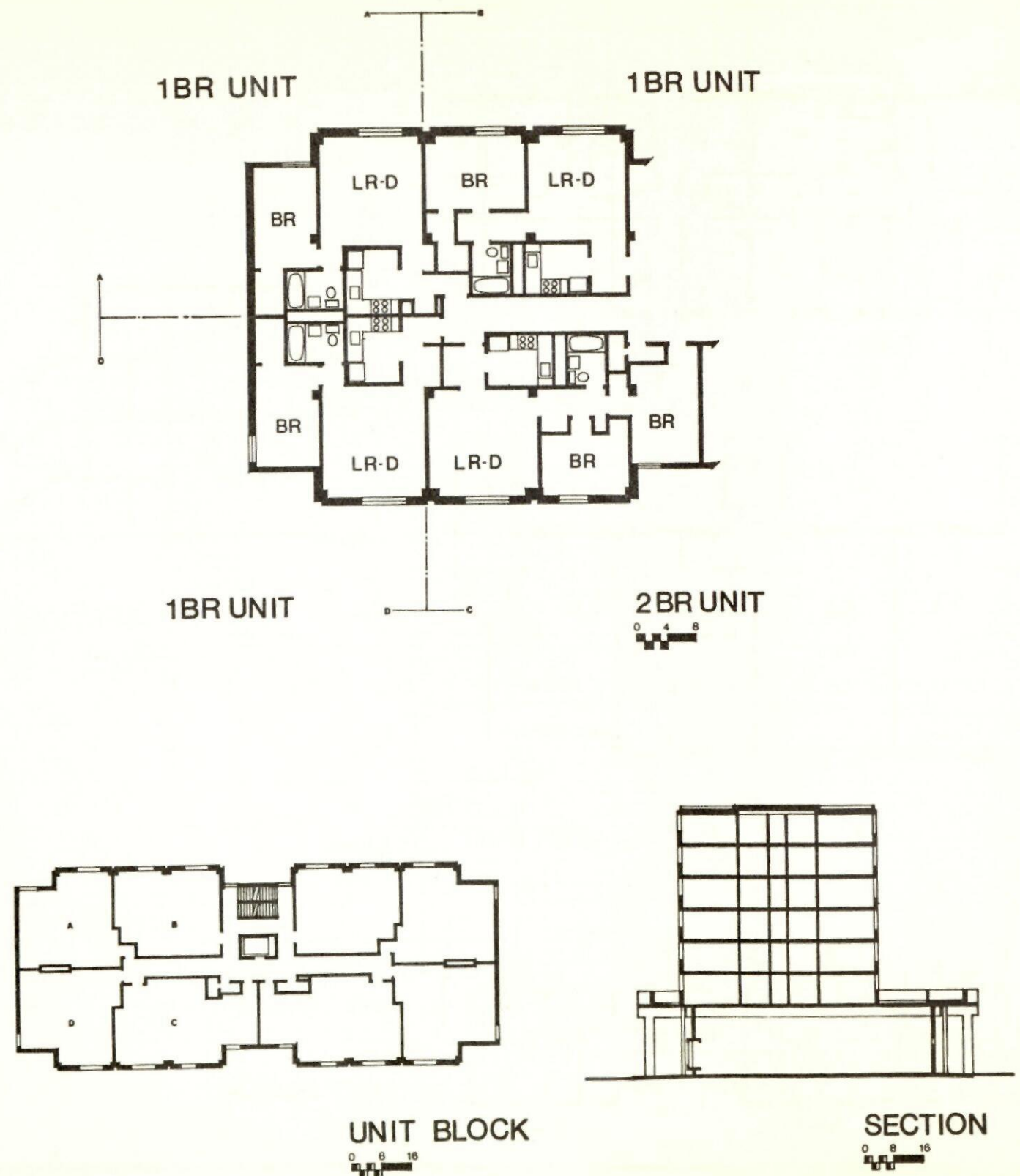
Any extra rent for

Parking.....

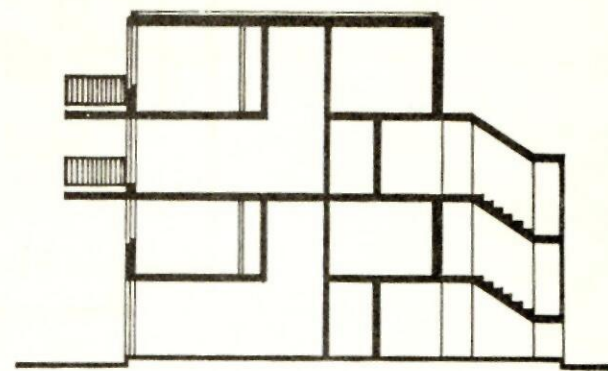
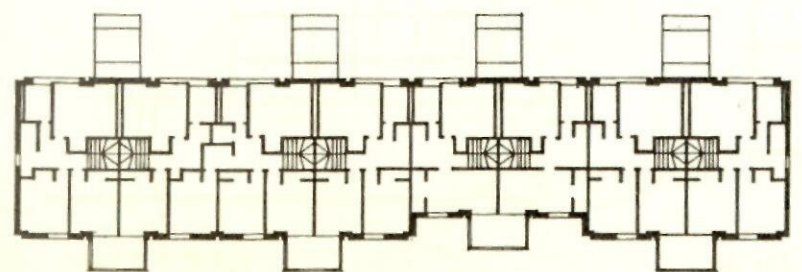
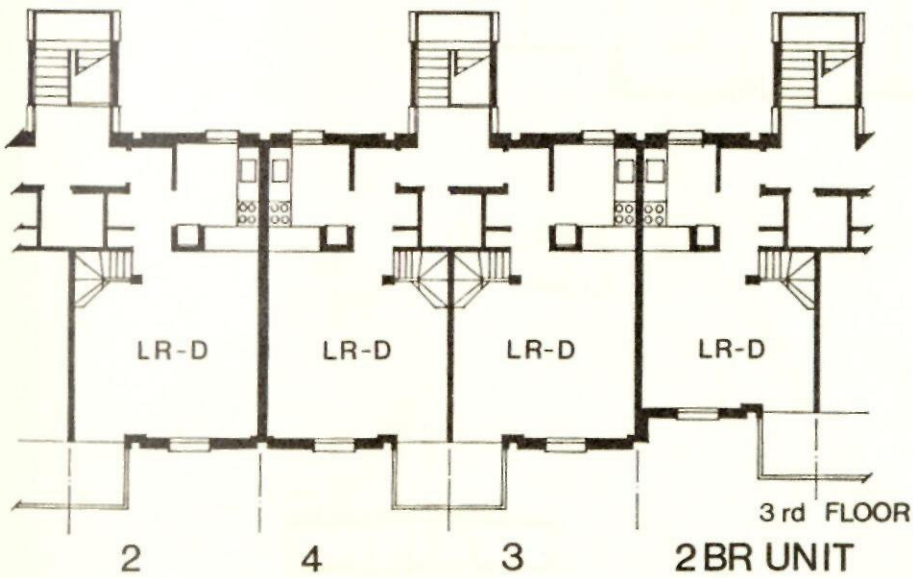
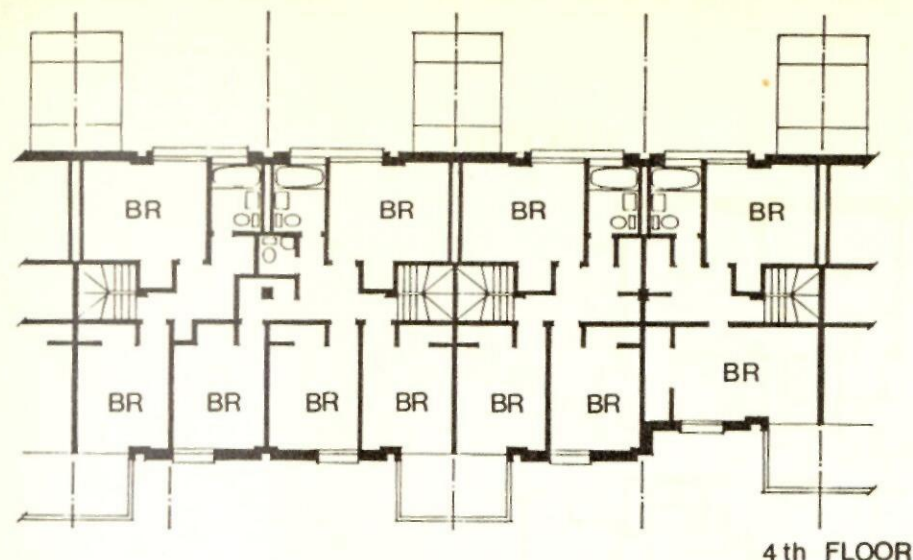
Recreational Facilities...

## REMARKS:

There was a problem with the foundation of the building: this resulted in a cost offset at the expense of the overall quality of the building.







SECTION  
0 4 8



UNIT BLOCK  
0 8 16

**CASTLE SQUARE**  
 Address: 500 South End, Boston  
 Architect: Samuel Glaser  
 Owner: The Drucker Company  
 Date of Completion: Summer, 1967

TYPE OF BUILDING: Walk-up  
 INCOME: Low

**BUILDING CHARACTERISTICS:**  
 Gross Building Area..... 321,810 s.f.  
 Net Usable Area..... 257,900 s.f.  
 Efficiency Index(Usable/Gross Bldg)..... 83.3 %  
 Types of Dwelling Unit in the Building:  
 Efficiency -- units 3-BR 132 units  
 1-BR -- units 4-BR 65 units  
 2-BR 111 units 5-BR -- units  
 Structural: Reinforced Concrete  
 Mechanical: Forced Hot Water Heating  
 Services: Laundry  
 Building Regulations: none

**DWELLING UNIT CHARACTERISTICS:**

Type of DU	Eff.	1-BR	2-BR	3-BR	4-BR	5-BR
BALCONY			25.0	25.0	25.0	
LR			334.0	334.0	334.0	
DR			(Comb with LR)			
K			92.0	92.0	92.0	
BR 1			128.0	128.0	128.0	
BR 2			120.0	120.0	120.0	
BR 3			--	114.0	114.0	
BR 4			--	--	114.0	
BR 5			--	--	--	
Net Lvg			699.0	813.0	927.0	
BATH			35.0	35.0	51.0	
STORAGE			27.0	45.0	47.0	
OTHERS			126.0	126.0	126.0	
Gross Unit			837.0	1019.0	1151.0	
Net L/G.U.			79 %	80 %	81 %	
Rent/month			\$ 125	\$ 135	\$ 160	

Any extra rent for  
 Parking.....none  
 Recreational Facilities...none

REMARKS:












## SOUTH END

D

- South End is composed of middle and low income families and majority of these families are black.
- The area where the ROXSE Homes are built is a sanitary land-filled ground of 14 ft. in depth.

### LAND USE (within 10 min-walk vicinity)

-  Commercial (Local retail & service store)
-  Business (Retail business & offices)
-  Residential
-  Housing Project Area
-  Industrial
-  Park/Open Space
-  Subway
-  Bus/Trolley
-  Commuter Train
- Inner Circle----- 5 min-walk
- Outer Circle----- 10 min-walk

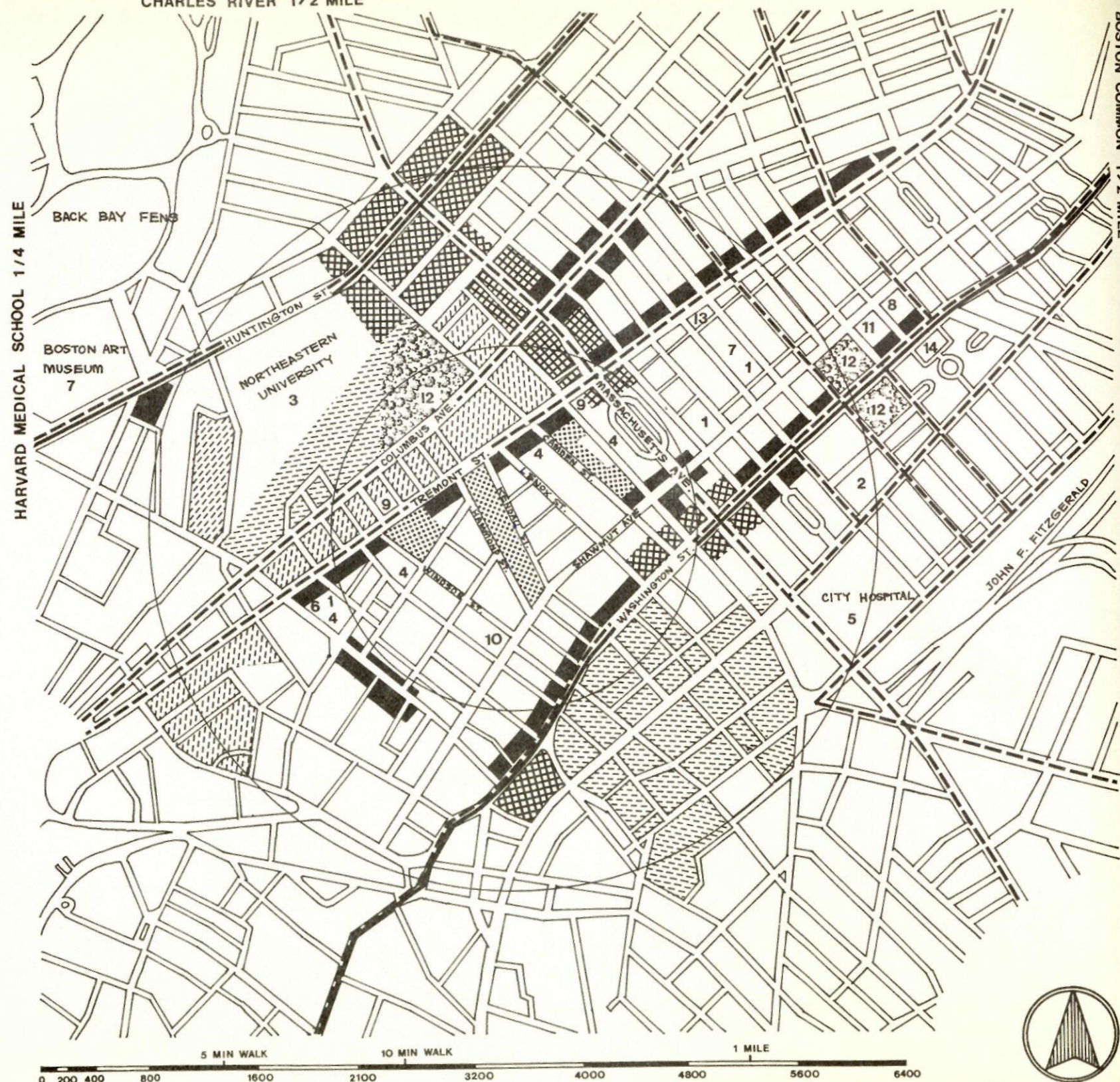
### NAME OF THE HOUSING PROJECT IN THE NEIGHBORHOOD:

ROXSE Homes

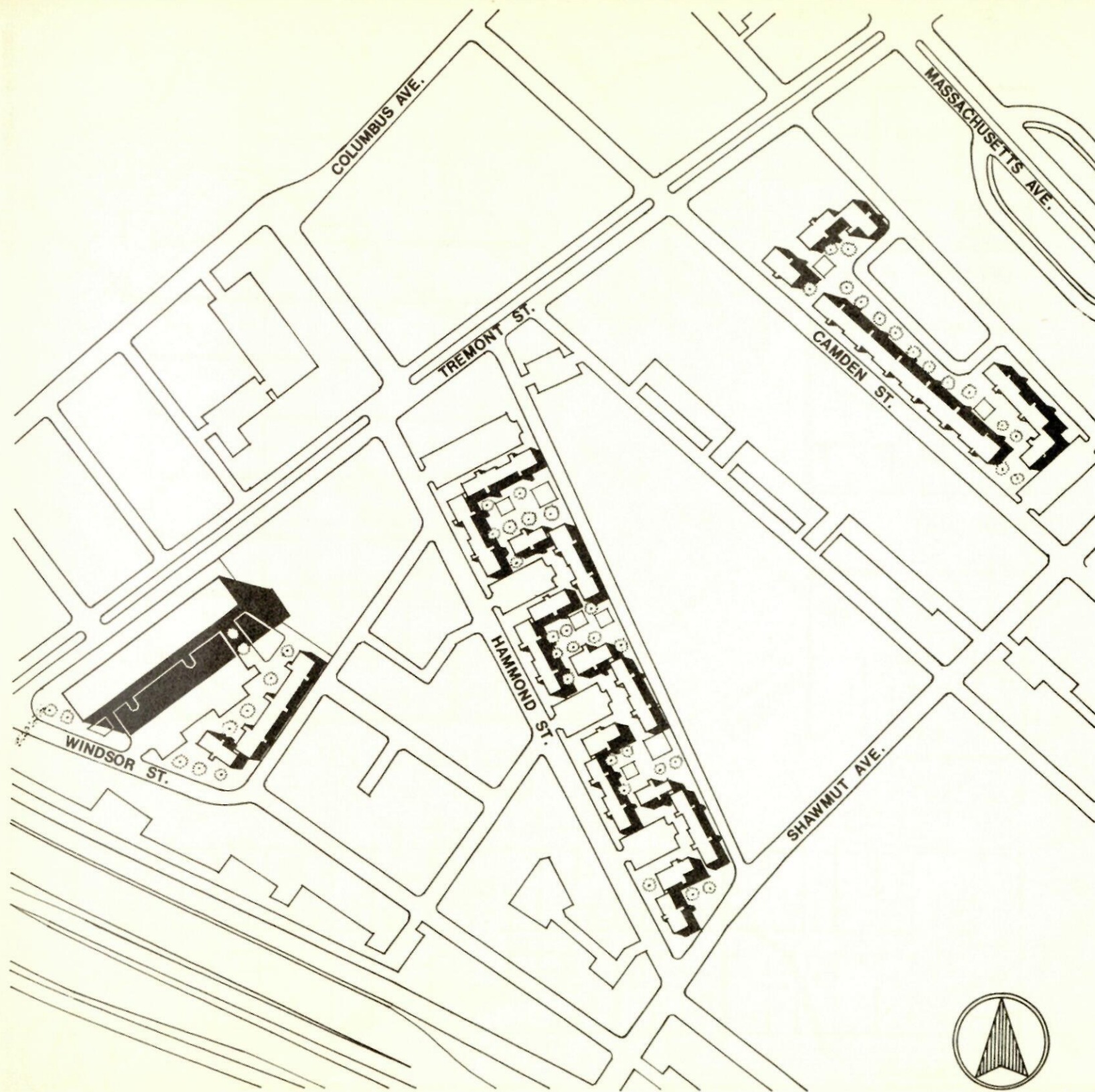
### FACILITIES IN THE NEIGHBORHOOD:

- (1) Primary and Secondary School
- (2) High School
- (3) University
- (4) Church
- (5) Hospital
- (6) Clinic
- (7) Museum
- (8) Library
- (9) Shopping Center
- (10) Community Center
- (11) Municipal Building
- (12) Park
- (13) Fire Station
- (14) Post Office

CHARLES RIVER 1/2 MILE







## ROXSE HOMES

Address: Tremont Street and Massachusetts Ave.

Architect: The Architects Collaborative

Owner: ROXSE HOMES INC.

Date of Completion: Winter, 1971

### SITE CHARACTERISTICS:

Total Site Area..... 8.9 acre  
 Total Building Coverage..... 105,308 sq.ft.  
 Bldg. Coverage / Site Area..... F.A.R. = 1.2  
 People / Acre..... 223  
 Dwelling Unit / Acre..... 36.7  
 Parking: Structure..... none  
           On Grade..... 72,736 sq.ft.  
 Parking / Dwelling Unit..... 7 : 10  
 Open Space: For People..... 233,296 sq.ft.  
                   For Auto..... 72,736 sq.ft.

### FACILITIES ON THE SITE:

(X) -- Nursery  
 ( ) -- Daycare Center  
 ( ) -- Doctors/Dentists  
 (X) -- Grocery Store  
 (X) -- Playground  
 ( ) -- Tennis Court  
 (X) -- Basketball Court  
 ( ) -- Swimming Pool  
 (X) -- Community Hall

### BUILDING TYPES ON THE SITE:

(A) Tower ( stories).....none  
 (B) Slab ( 8 stories).....1  
 (C) Walkup ( 3 stories).....12  
 (D) Row.....none  
 (E) Other.....none

### PEOPLE:

White..... 5 %  
 Non-White..... 95 %  
 Income Groups: Welfare 10 % Low 70 %  
                           Middle 20 % High -- 10 %

### ECONOMICS:

Total Project Cost..... \$ 7,195,343  
 Cost per sq.ft..... \$ 19/sq.ft.  
 Maintenance per year or month.. \$ 53,627/yr  
 Amortization Period..... 40 years  
 Financing..... FHA 221 (d)(3)  
 Vacancy Rate..... not avail.  
 Turnover Rate..... not avail.



# ROXSE HOMES

Address: Tremont Street & Massachusetts Ave.

Architect: The Architects Collaborative

Owner: ROXSE HOMES INC.

Date of Completion: Winter, 1971

TYPE OF BUILDING: Slab

INCOME: Middle & Low

## BUILDING CHARACTERISTICS:

Gross Building Area..... 171,263 s.f.  
Net Usable Area..... 120,938 s.f.

Efficiency Index(Usable/Gross Bldg).....78 %

Types of Dwelling Unit in the Building:

Efficiency	-- units	3-BR	-- units
1-BR	60	4-BR	-- units
2-BR	82	5-BR	-- units

Structural: Techcrete System

Mechanical: Forced Hot Water Heating

Services: Laundry - Dry Cleaners

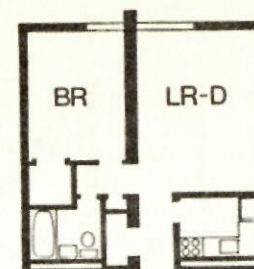
Building Regulations: No Pets

## DWELLING UNIT CHARACTERISTICS:

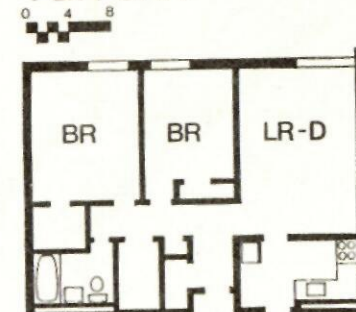
Type of DU	Eff.	1-BR	2-BR	3-BR	4-BR	5-BR
BALCONY		--	--			
LR		198.0	198.0			
DR		(Comb w/ LR)				
K		52.0	78.0			
BR 1		155.0	153.0			
BR 2		--	117.0			
BR 3		--	--			
BR 4		--	--			
BR 5		--	--			
Net Lvg		405.0	546.0			
BATH		36.0	38.0			
STORAGE		18.0	49.0			
OTHERS		81.0	119.0			
Gross Unit		529.0	768.0			
Net L/G.U.		75 %	73 %			
Rent/month		\$ 123	\$ 145			

Any extra rent for  
Parking..... none  
Recreational Facilities... none

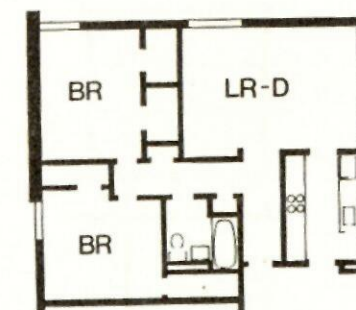
REMARKS:



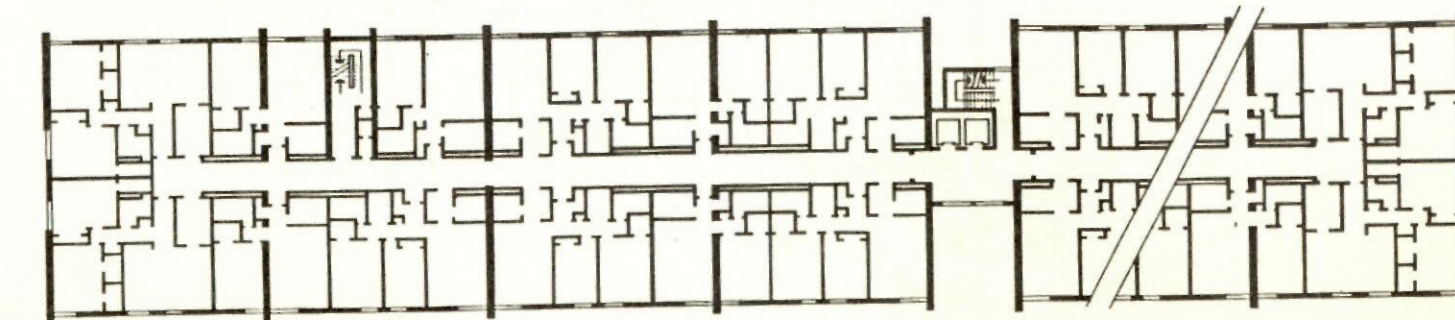
1 BR UNIT



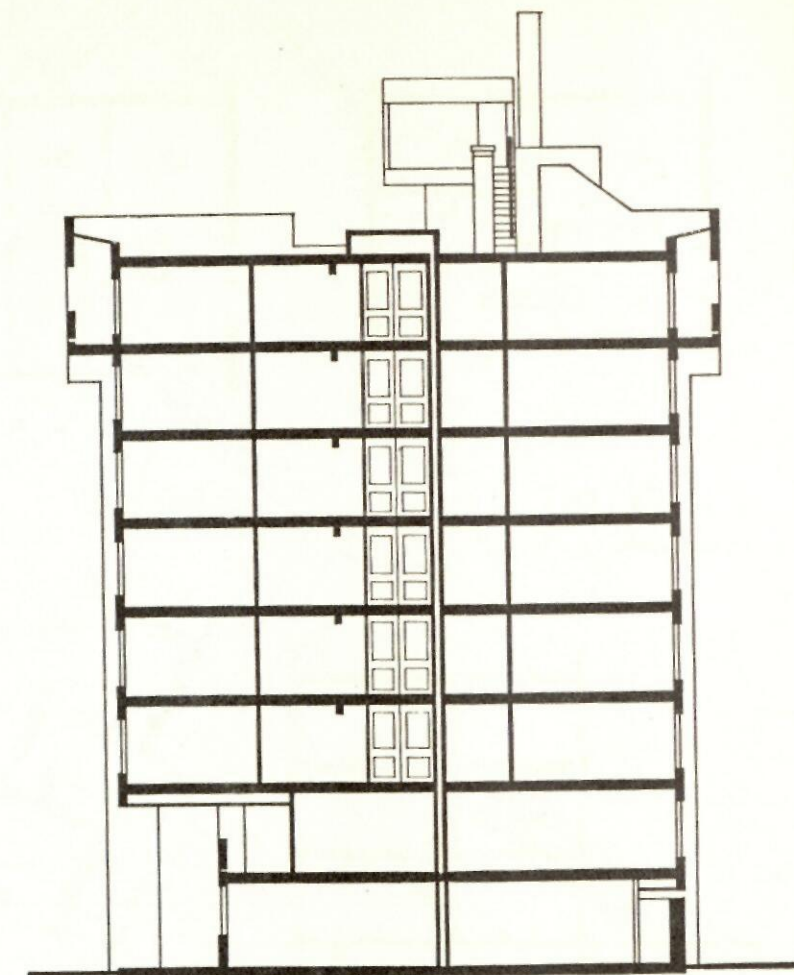
2 BR UNIT



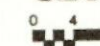
2 BR UNIT



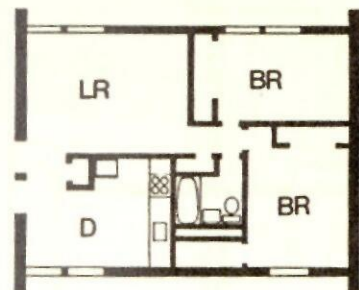
UNIT BLOCK



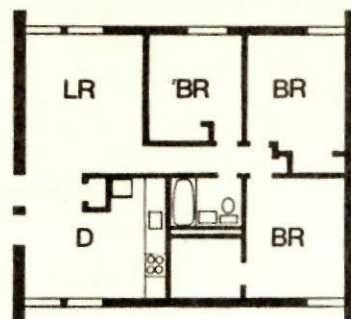
SECTION



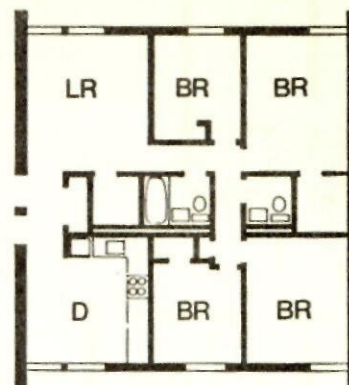




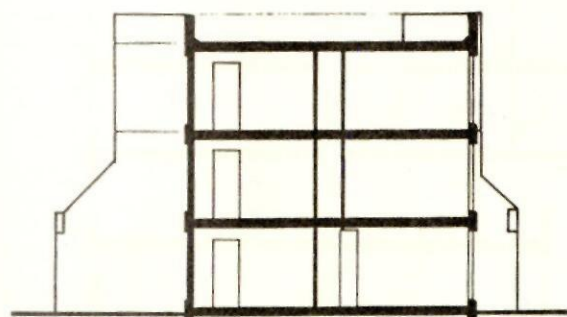
2 BR UNIT



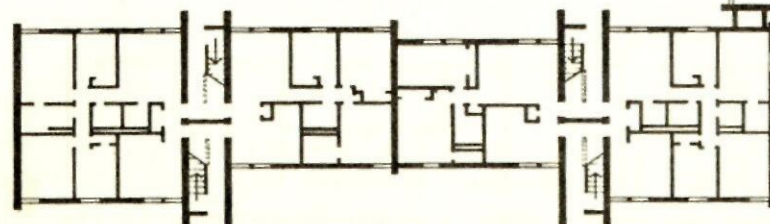
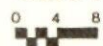
3 BR UNIT



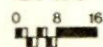
4 BR UNIT



SECTION



UNIT BLOCK



## ROXSE HOMES

Address: Tremont Street & Massachusetts Ave.

Architect: The Architects Colaborative

Owner:

Date of Completion: Winter, 1971

TYPE OF BUILDING: Walk-up

INCOME: Middle and Low

### BUILDING CHARACTERISTICS:

Gross Building Area.....228,516 s.f.

Net Usable Area.....195,371 s.f.

Efficiency Index(Usable/Gross Bldg)..... 86 %

Types of Dwelling Unit in the Building:

Efficiency -- units 3-BR 117 units

1-BR -- units 4-BR 66 units

2-BR 39 units 5-BR -- units

Structural: Techcrete System

Mechanical: Forced Hot Water Heating

Services: Laundry Connection per each unit

Building Regulations: No Pets

### DWELLING UNIT CHARACTERISTICS:

Type of DU	Eff.	1-BR	2-BR	3-BR	4-BR	5-BR
BALCONY			--	--	--	
LR			195.0	168.0	178.0	
DR			140.0	150.3	162.5	
K			Combined with DR			
BR 1			140.0	138.4	170.2	
BR 2			139.5	124.0	130.0	
BR 3			--	105.6	117.0	
BR 4			--	--	99.0	
BR 5			--	--	--	
Net Lvg			614.5	686.3	857.6	
BATH			49.0	35.0	57.5	
STORAGE			18.2	42.0	25.0	
OTHEPS			98.3	114.2	164.9	
Gross Unit			780.0	877.5	1088.0	
Net L/G.U.			78 %	78 %	78 %	
Rent/month			\$ 145	\$ 166	\$ 188	

Any extra rent for

Parking.....none

Recreational Facilities...none

REMARKS:












## WASHINGTON PARK

E

- Washington Park is located in the District of Roxbury and is composed of predominantly black, low income families.
- This neighborhood has recently been an area of major urban renewal development in the city of Boston.
- Washington Park is bordered by Harvard Medical School to the northwest, City Hospital to north-east, and Franklin Park to the south.

### LAND USE (within 10 min-walk vicinity)

-  Commercial (Local retail & service stores)
-  Business (Retail business & offices)
-  Residential
-  Housing Project Area
-  Industrial
-  Park/Open Space
-  Subway
-  Bus/Trolley
-  Commuter Train

Inner Circle--- 5 min-walk

Outer Circle--- 10 min-walk

### NAME OF THE HOUSING PROJECT IN THE NEIGHBORHOOD:

Academy Homes I & II...(A),(B)

Westminster Court.....(C)

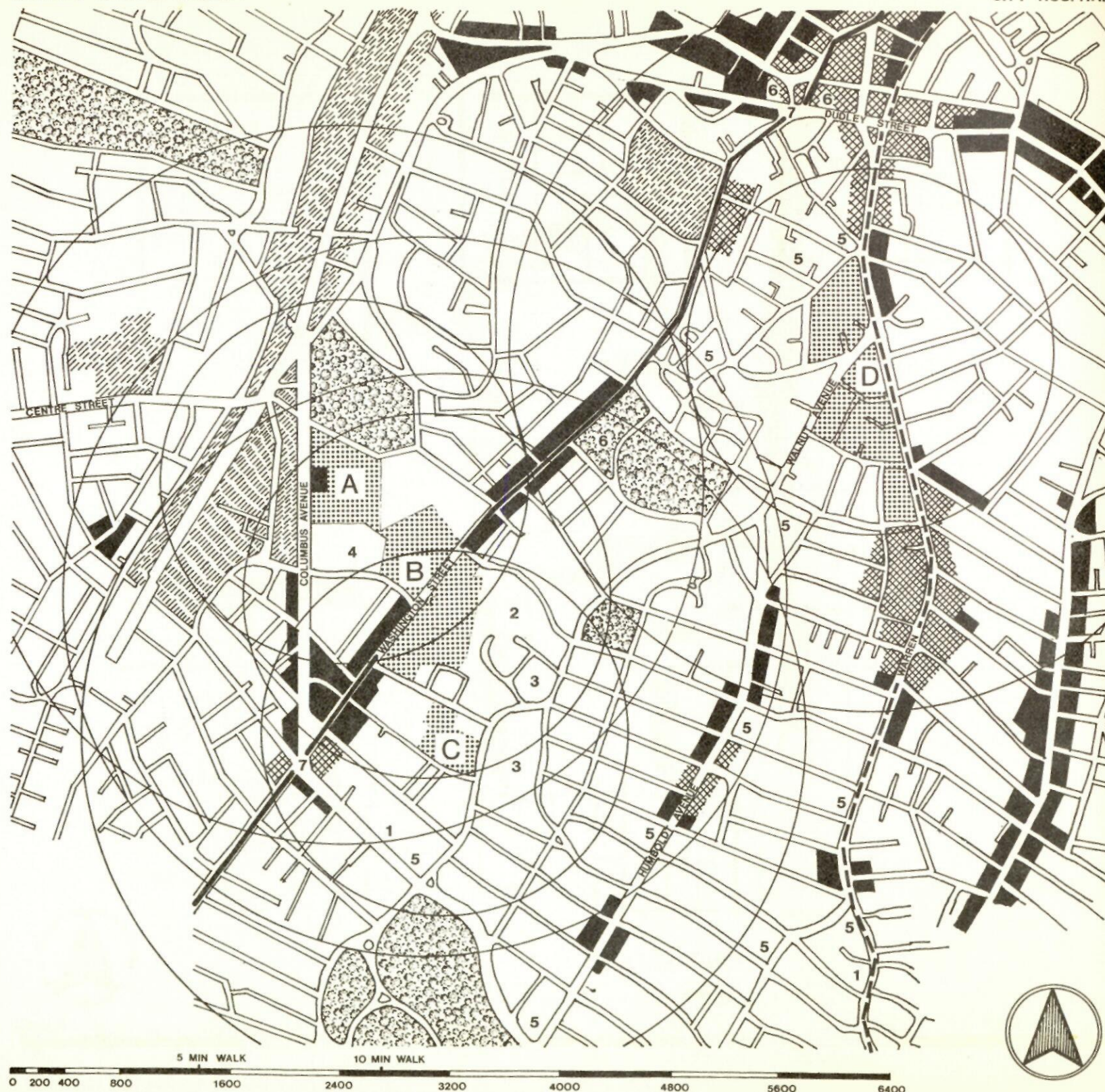
Warren Gardens.....(D)

### FACILITIES IN THE NEIGHBORHOOD:

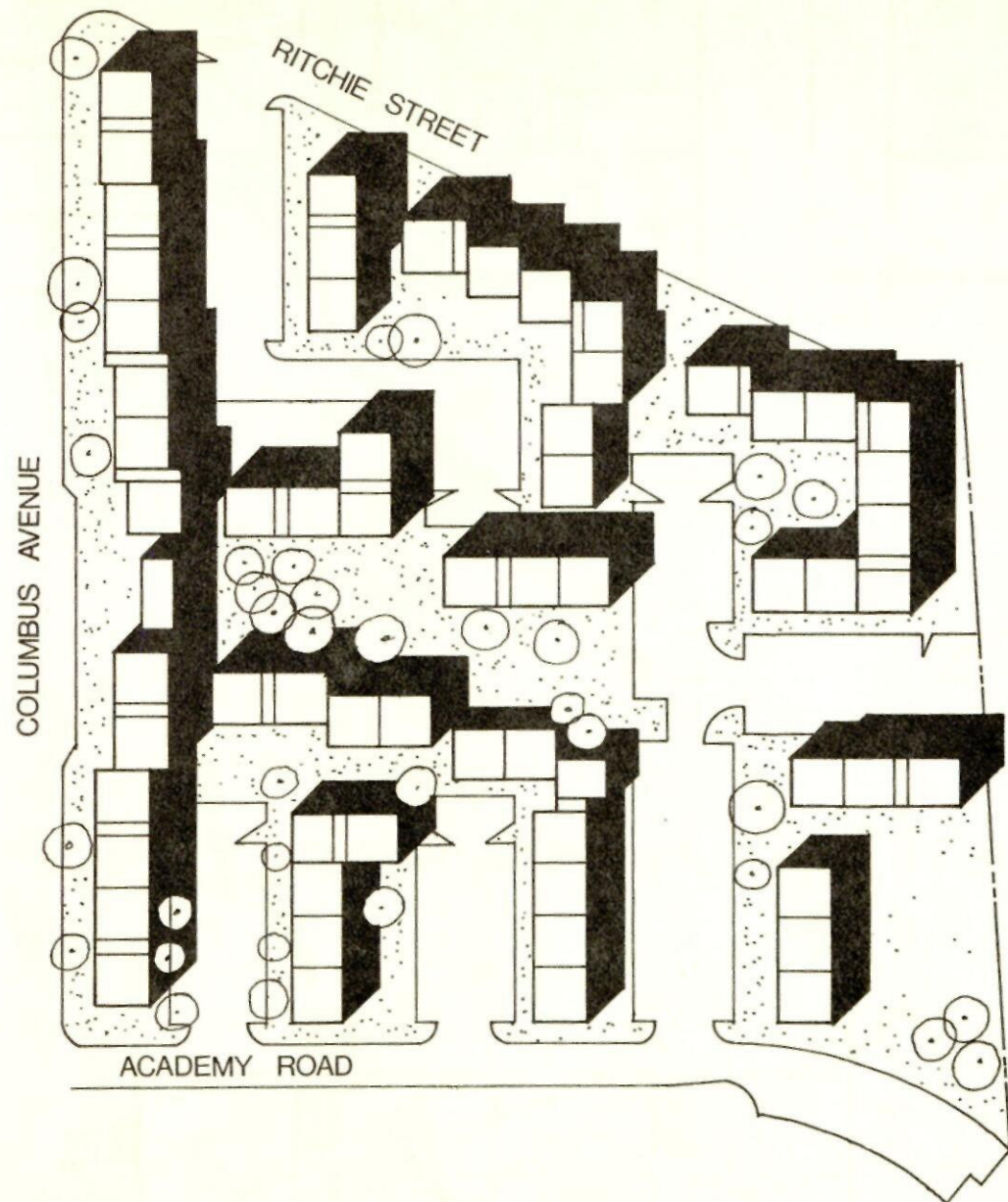
- (1) Library
- (2) Hospital
- (3) Elementary School
- (4) Daycare Center
- (5) Church
- (6) Entertainment Facilities
- (7) Public Transit

HARVARD MEDICAL SCHOOL

CITY HOSPITAL







## ACADEMY HOMES 1

Address: Columbia Ave & Ritchie St, Roxbury

Architect: Carl Koch & Assoc, Inc.

Owner: B.U.S.E. of Boston

Date of Completion: Winter, 1965

### SITE CHARACTERISTICS:

Total Site Area.....	4.72	acre
Total Building Coverage.....	71,710	s.f.
Bldg. Coverage / Site Area.....	21.6	%
People / Acre.....	83	
Dwelling Unit / Acre.....	42.8	
Parking: Structure.....	none	
On Grade.....	in Public Streets	
Parking / Dwelling Unit.....	1/1	
Open Space: For People.....	122,948	s.f.
For Auto.....	Streets	

### FACILITIES ON THE SITE:

- ( ) -- Nursery
- ( ) -- Daycare Center
- ( ) -- Doctors/Dentists
- (X) -- Grocery Store
- ( ) -- Playground
- ( ) -- Tennis Court
- ( ) -- Basketball Court
- ( ) -- Swimming Pool
- (X) -- Community Hall

### BUILDING TYPES ON THE SITE:

- (A) Tower ( stories).....none
- (B) Slab ( stories).....none
- (C) Walkup (3 stories).....62
- (D) Row .....none
- (E) Other .....none

### PEOPLE:

White.....	0	%
Non-White.....	100	%
Income Groups: Welfare -- %	Low	100 %
Middle -- %	High	-- %

### ECONOMICS:

Total Project Cost.....	\$ 3,319,000
Cost per sq.ft.....	\$ 11.00/s.f.
Maintenance per year or month..	not avail.
Amortization Period.....	40 years
Financing.....	FHA 221(d)(3)
Vacancy Rate.....	0 %
Turnover Rate.....	10%



# ACADEMY HOMES 1

Address: Columbia Ave & Ritchie St, Roxbury

Architect: Carl Koch & Assoc.

Owner: B.U.S.E. of Boston

Date of Completion: Winter, 1965

TYPE OF BUILDING: Walk-up

INCOME: Low

## BUILDING CHARACTERISTICS:

Gross Building Area..... 71,710 s.f.

Net Usable Area..... 61,950 s.f.

Efficiency Index(Usable/Gross Bldg).....85 %

Types of Dwelling Unit in the Building:

Efficiency	-- units	3-BR	80 units
1-BR	23 units	4-BR	41 units
2-BR	42 units	5-BR	16 units

Structural: Precast Concrete (techcrete)

Mechanical: Gas Fuel Hot Water Heating

Services: Laundry

Building Regulations: none

## DWELLING UNIT CHARACTERISTICS:

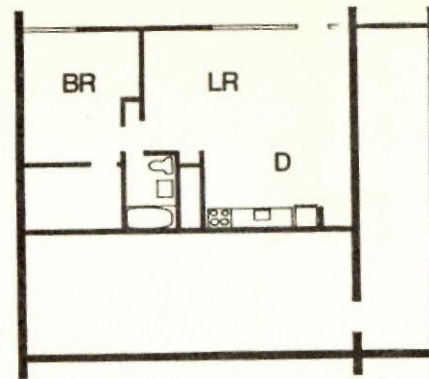
Type of DU	Eff.	1-BR	2-BR	3-BR	4-BR	5-BR
BALCONY		--	30.0	30.0	30.0	30.0
LR		240.0	214.0	210.0	228.0	190.0
DR		77.0	190.0	195.0	190.0	190.0
K		(Combined with DR)				
BR 1		130.0	140.0	140.0	130.0	140.0
BR 2		--	90.0	90.0	90.0	100.0
BR 3		--	--	103.0	103.0	90.0
BR 4		--	--	--	90.0	90.0
BR 5		--	--	--	--	130.0
Net Lvg		447.0	664.0	768.0	861.0	960.0
BATH		35.0	38.0	38.0	38.0	70.0
STORAGE		71.0	85.0	86.0	100.0	200.0
OTHERS		--	--	111.0	--	--
Gross Unit		553.0	787.0	1003.0	999.0	1230.0
Net L/G.U.		80 %	84 %	76 %	85 %	78 %
Rent/month		\$101	\$ 116	\$131- 140	\$148- 162	\$ 175

Any extra rent for

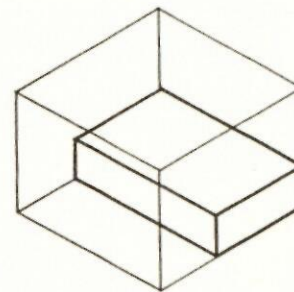
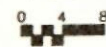
Parking..... none

Recreational Facilities... none

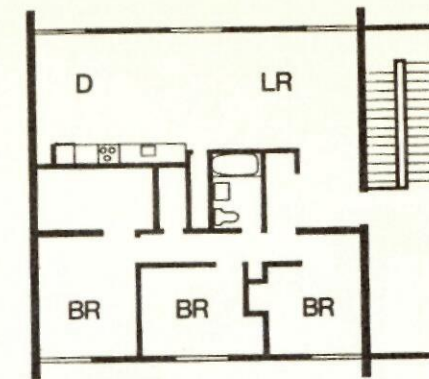
REMARKS:



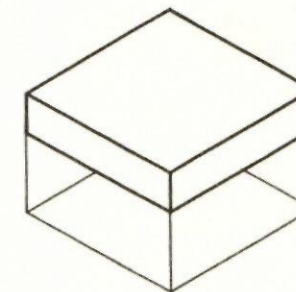
1 BR UNIT



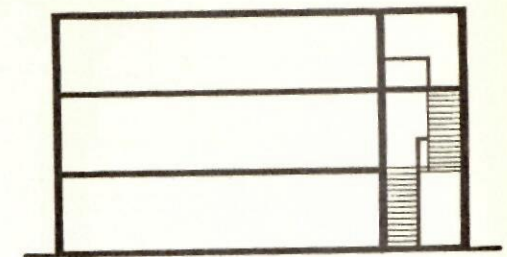
1 BR ISOMETRIC



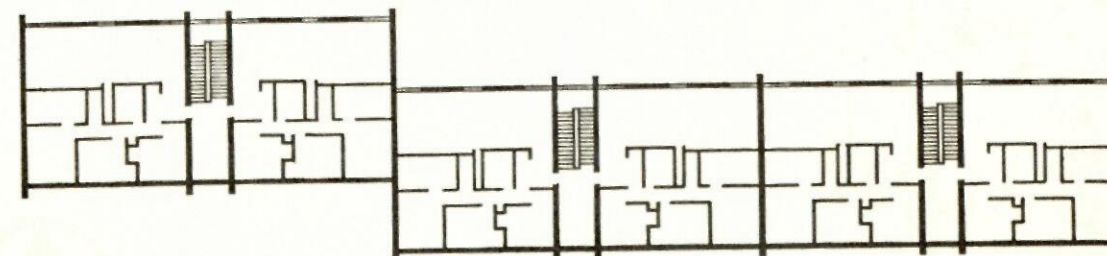
3 BR UNIT



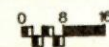
3 BR ISOMETRIC



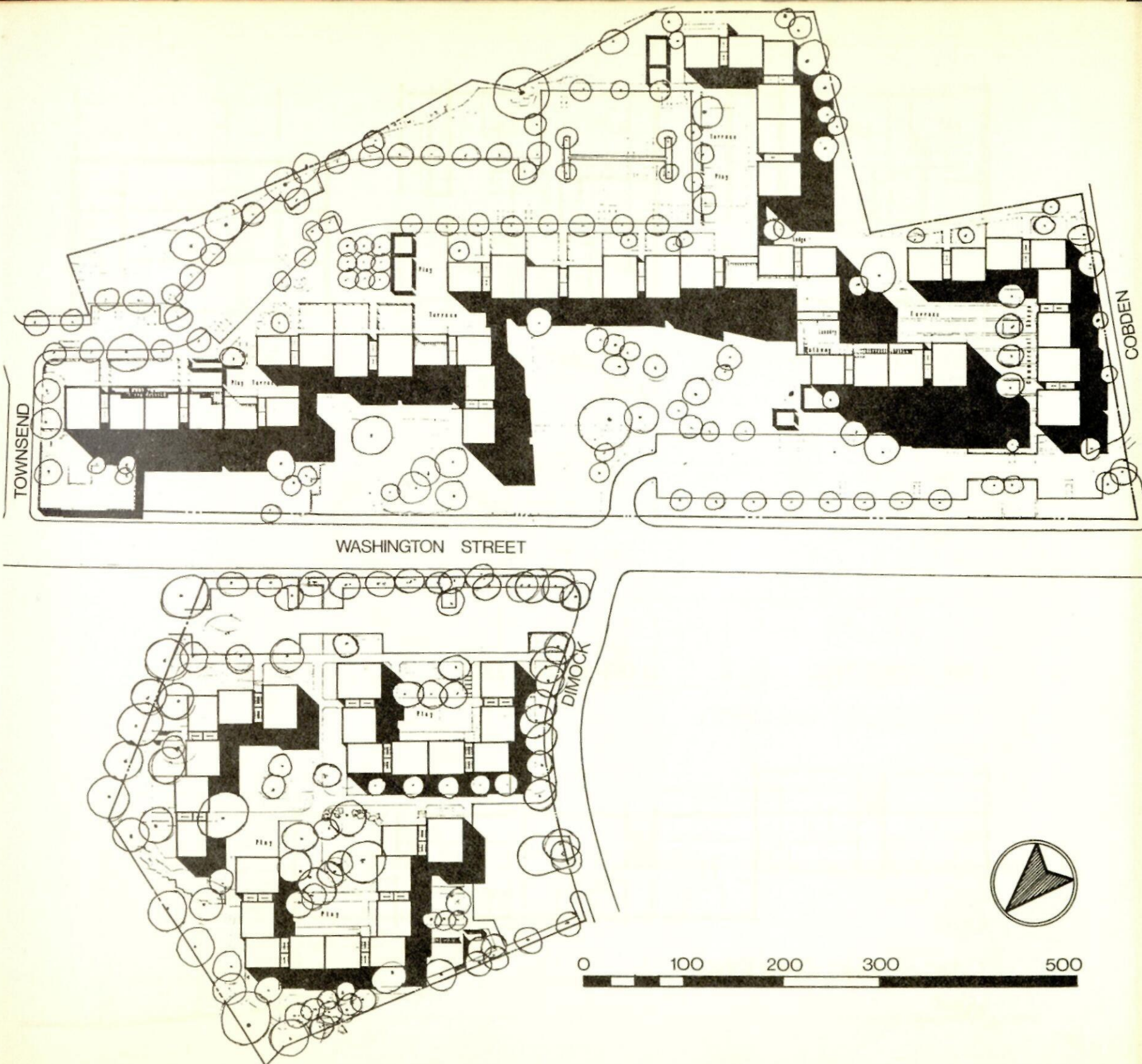
SECTION



TYPICAL UNIT GROUPING







## ACADEMY HOMES 2

Address: 2966 Washington St., Roxbury

Architect: Carl Koch & Assoc.

Owner: Academy Homes 2 Incorporated

Date of Completion: Spring, 1968

### SITE CHARACTERISTICS:

Total Site Area.....	13.5 acre
Total Building Coverage.....	75,456 s.f.
Bldg. Coverage / Site Area.....	13.6 %
People / Acre.....	68
Dwelling Unit / Acre.....	23.4
Parking: Structure.....	none
On Grade.....	62,800 s.f.
Parking / Dwelling Unit.....	1/1
Open Space: For People.....	364,500 s.f.
For Auto.....	105,950 s.f.

### FACILITIES ON THE SITE:

- (X) -- Nursery
- ( ) -- Daycare Center
- ( ) -- Doctors/Dentists
- (X) -- Grocery Store
- ( ) -- Playground
- ( ) -- Tennis Court
- ( ) -- Basketball Court
- ( ) -- Swimming Pool
- (X) -- Community Hall

### BUILDING TYPES ON THE SITE:

- (A) Tower ( stories)..... none
- (B) Slab ( stories)..... none
- (C) Walkup (3-9 stories)..... 68
- (D) Row ..... none
- (E) Other..... none

### PEOPLE:

White.....	0 %
Non-White.....	100 %
Income Groups: Welfare -- %	Low 100 %
Middle -- %	High -- %

### ECONOMICS:

Total Project Cost.....	\$ 5,864,000
Cost per sq.ft.....	\$ 11/s.f.
Maintenance per year or month..	not avail.
Amortization Period.....	40 years
Financing.....	FHA 221(d)(3)
Vacancy Rate.....	0 %
Turnover Rate.....	16%



## ACADEMY HOMES 2

Address: 2966 Washington St, Roxbury

Architect: Carl Koch & Assoc.

Owner: Academy Homes 2 Incorporated

Date of Completion: Spring, 1968

TYPE OF BUILDING: Walk-up

INCOME: Low

### BUILDING CHARACTERISTICS:

Gross Building Area..... 75,456 s.f.

Net Usable Area.....

Efficiency Index(Usable/Gross Bldg).....

Types of Dwelling Unit in the Building:

Efficiency	-- units	3-BR	130 units
1-BR	22 units	4-BR	79 units
2-BR	84 units	5-BR	-- units

Structural: Precast Concrete (Techcrete)

Mechanical: Gas Fuel Hot Water Heating

Services: Laundry, Community Room

Building Regulations: none

### DWELLING UNIT CHARACTERISTICS:

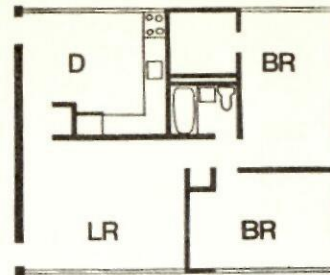
Type of DU	Eff.	1-BR	2-BR	3-BR	4-BR	5-BR
BALCONY		--	--	--	--	
LR		279.0	220.0	246.0	260.0	
DR		in LR	167.0	160.0	134.0	
K		85.0	(Combined with DR)			
BR 1		130.0	149.0	130.0	148.0	
BR 2		--	130.0	110.0	141.0	
BR 3		--	--	96.0	106.0	
BR 4		--	--	--	96.0	
BR 5		--	--	--	--	
Net Lvg		494.0	666.0	742.0	885.0	
BATH		38.0	38.0	38.0	59.0	
STORAGE		54.0	56.0	48.0	108.0	
OTHERS		--	18.0	30.0	66.0	
Gross Unit		586.0	778.0	858.0	1118.0	
Net L/G.U.		82 %	86 %	86 %	78 %	
Rent/month		\$ 114	\$ 127	\$ 138	\$ 149	

Any extra rent for

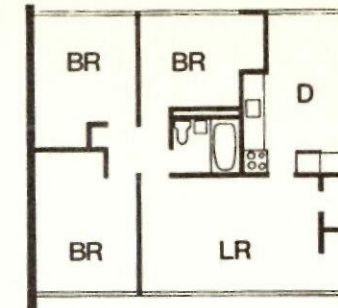
Parking.....none

Recreational Facilities...none

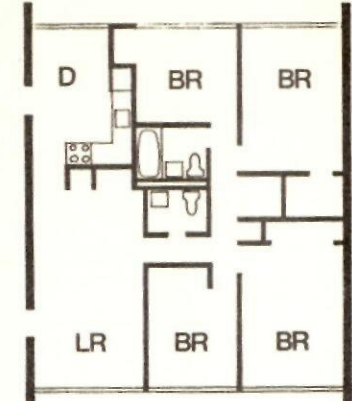
REMARKS:



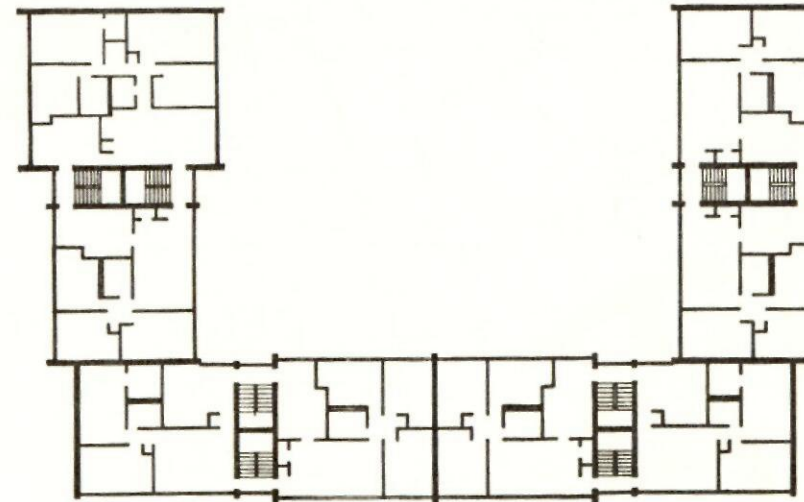
2 BR UNIT



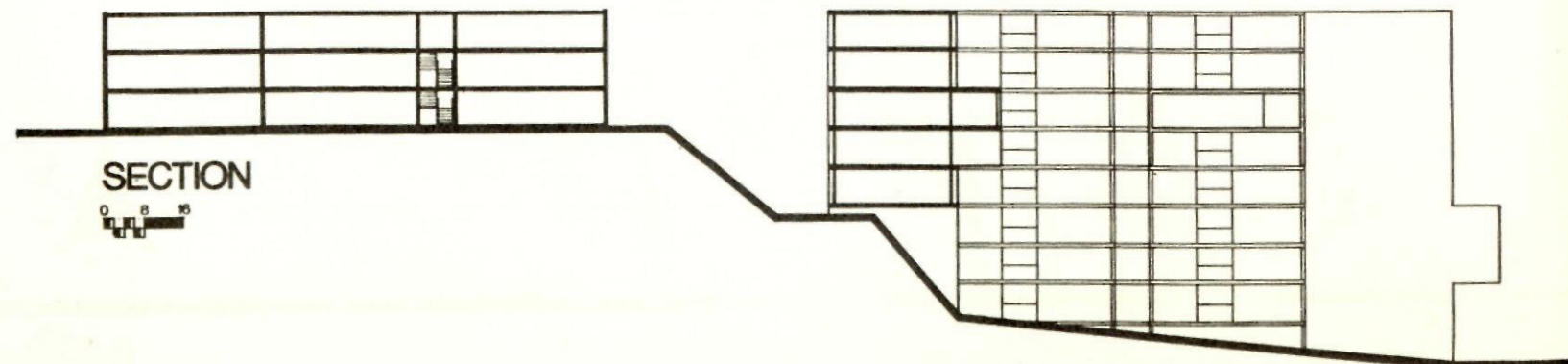
3 BR UNIT



4 BR UNIT



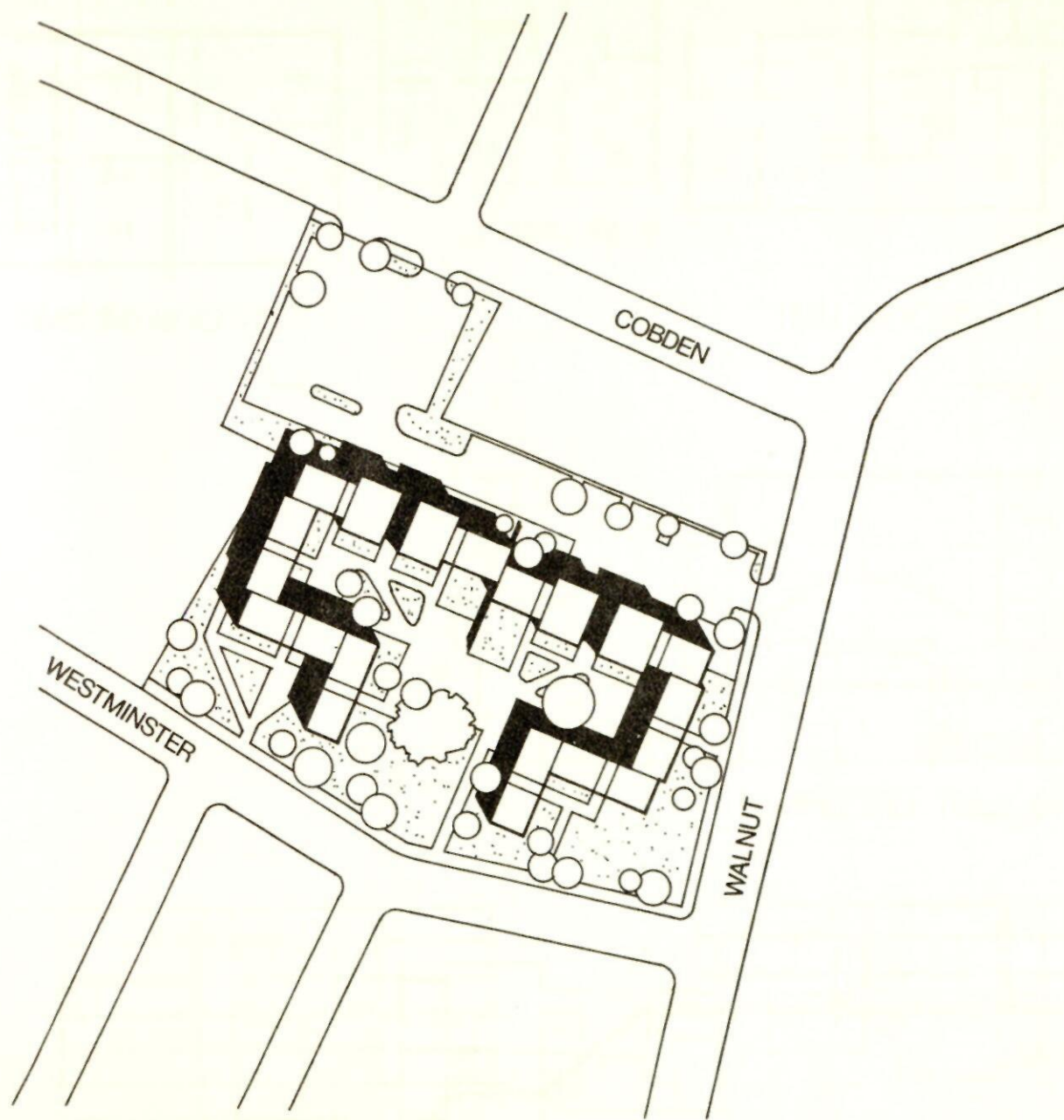
TYPICAL UNIT GROUPING



SECTION







**WESTMINSTER COURT**  
 Address: Westminster St & Walnut St, Roxbury  
 Architect: Carl Koch & Assoc.  
 Owner: Development Corporation of America  
 Date of Completion: Fall, 1967

**SITE CHARACTERISTICS:**

Total Site Area.....	2.6 acre
Total Building Coverage.....	22,220 s.f.
Bldg.Coverage / Site Area.....	20 %
People / Acre.....	80
Dwelling Unit / Acre.....	24
Parking: Structure.....	none
On Grade.....	13,140 s.f.
Parking / Dwelling Unit.....	1/1
Open Space: For People.....	66,030 s.f.
For Auto.....	25,400 s.f.

- FACILITIES ON THE SITE:**
- ( )-- Nursery
  - ( )-- Daycare Center
  - ( )-- Doctors/Dentists
  - ( )-- Grocery Store
  - ( )-- Playground
  - ( )-- Tennis Court
  - ( )-- Basketball Court
  - ( )-- Swimming Pool
  - ( )-- Community Hall
- None of these.

- BUILDING TYPES ON THE SITE:**
- (A) Tower ( stories).....none
  - (B) Slab ( stories).....none
  - (C) Walkup (2-4stories).....10
  - (D) Row.....none
  - (E) Other.....none

PEOPLE:			
White.....	0	%	
Non-White.....	100	%	
Income Groups: Welfare	2	%	Low 98 %
Middle	--	%	High -- %

**ECONOMICS:**

Total Project Cost.....	\$ 1,128,000
Cost per sq.ft.....	\$ 18.16/s.f.
Maintenance per year or month..	not available
Amortization Period.....	40 years
Financing.....	FHA 221(d)(3)
Vacancy Rate.....	0 %
Turnover Rate.....	6 %



# WESTMINSTER COURT

Address: Westminster St & Walnut St, Roxbury

Architect: Carl Koch & Assoc.

Owner: Development Corporation of America

Date of Completion: Fall, 1967

TYPE OF BUILDING: Walk-up

INCOME: Low

## BUILDING CHARACTERISTICS:

Gross Building Area.....62,100 s.f.

Net Usable Area.....47,850 s.f.

Efficiency Index(Usable/Gross Bldg)..... 81 %

Types of Dwelling Unit in the Building:

Efficiency	-- units	3-BR	-- units
1-BR	24 units	4-BR	-- units
2-BR	46 units	5-BR	-- units

Structural: Precast Concrete

Mechanical: Gas Fired Hot Water Heating.

Services: none

Building Regulations: none

## DWELLING UNIT CHARACTERISTICS:

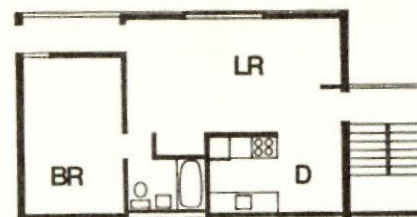
Type of DU	Eff.	1-BR	2-BR	3-BR	4-BR	5-BR
BALCONY		20.0	--			
LR		237.0	220.0			
DR		53.0	161.0			
K		170.0	143.0			
BR 1		--	130.0			
BR 2		--	--			
BR 3		--	--			
BR 4		--	--			
BR 5		--	--			
Net Lvg		480.0	654.0			
BATH		35.0	38.0			
STORAGE		20.0	56.0			
OTHERS		--	--			
Gross Unit		480.0	654.0			
Net L/G.U.		90 %	86 %			
Rent/month		\$ 118	\$ 134			

Any extra rent for

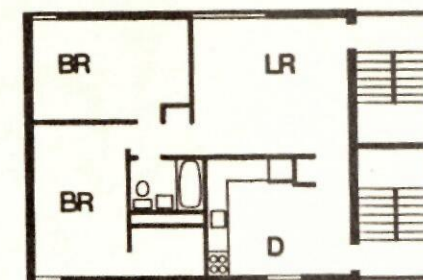
Parking.....none

Recreational Facilities...none

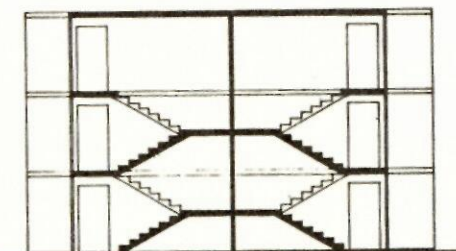
## REMARKS:



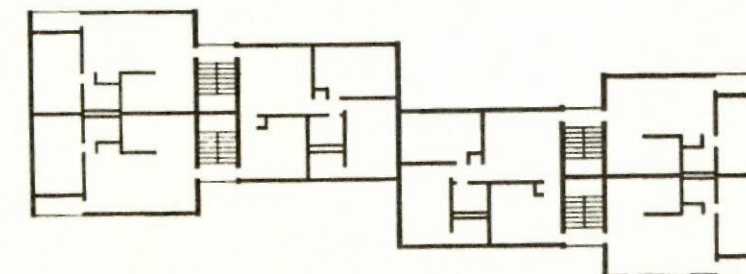
1 BEDROOM UNIT



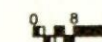
2 BEDROOM UNIT



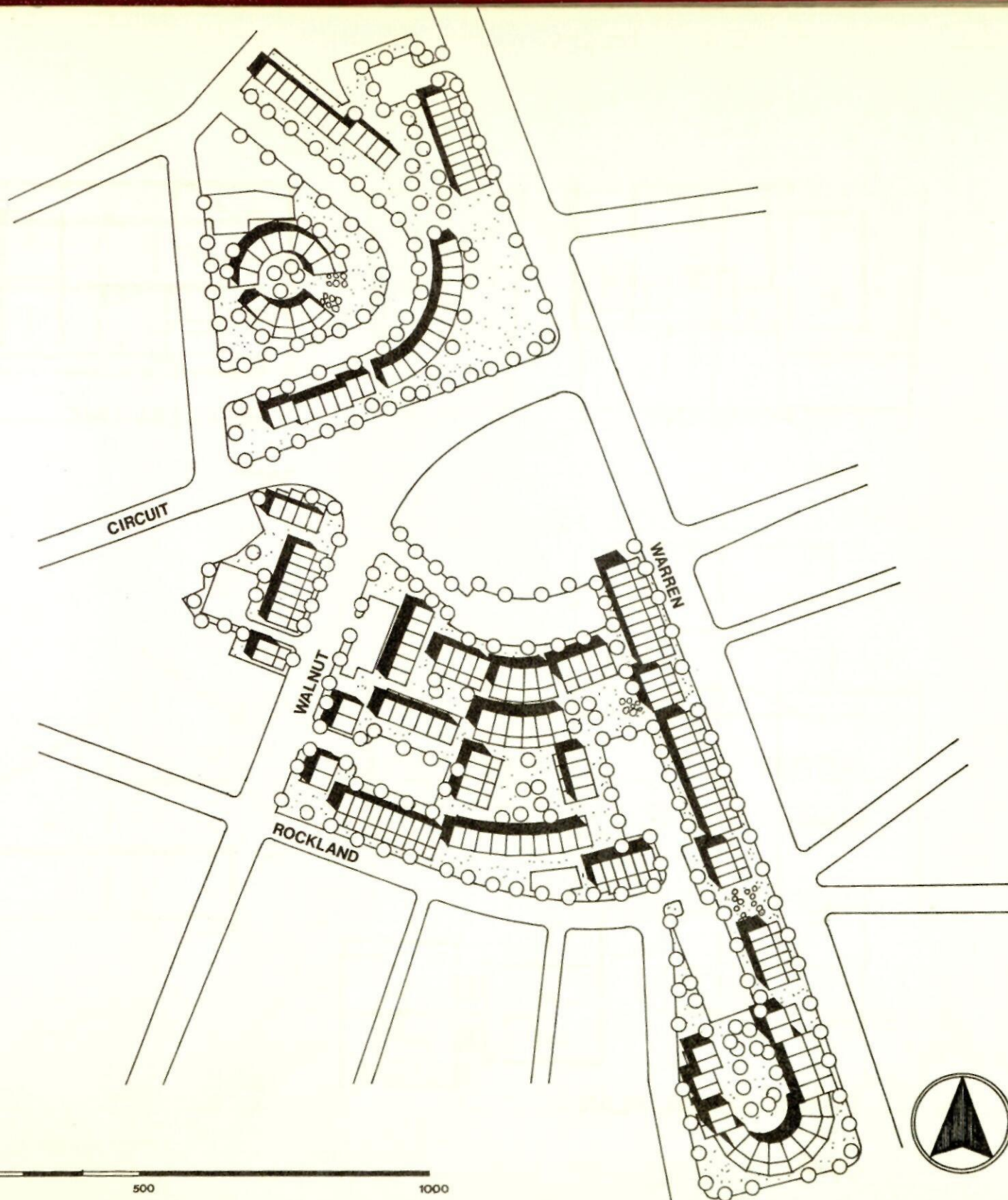
SECTION



TYPICAL FLOOR PLAN







## WARREN GARDENS

Address: Warren St & Walnut St, Roxbury

Architect: H. Stubbins & Assoc. / Ashley, Myer, Smith

Owner: Beacon Redevelopment Corporation

Date of Completion: Spring, 1968

### SITE CHARACTERISTICS:

Total Site Area..... 9.8 acre  
 Total Building Coverage..... 132,600 s.f.  
 Bldg. Coverage / Site Area..... 15 %  
 People / Acre..... FAR 0.62  
 Dwelling Unit / Acre..... 11.2  
 Parking: Structure..... none  
           On Grade..... 40,860 s.f.  
 Parking / Dwelling Unit..... 1/1  
 Open Space: For People..... 487,400 s.f.  
                   For Auto..... 268,400 s.f.

### FACILITIES ON THE SITE:

( ) -- Nursery  
 ( ) -- Daycare Center  
 ( ) -- Doctors/Dentists  
 ( ) -- Grocery Store  
 (X) -- Playground  
 ( ) -- Tennis Court  
 ( ) -- Basketball Court  
 ( ) -- Swimming Pool  
 ( ) -- Community Hall

### BUILDING TYPES ON THE SITE:

(A) Tower ( stories)..... none  
 (B) Slab ( stories)..... none  
 (C) Walkup ( stories)..... none  
 (D) Row ..... 182  
 (E) Other..... none

### PEOPLE:

White..... 0.3 %  
 Non-White..... 99.7 %  
 Income Groups: Welfare 36 % Low 44 %  
                           Middle 20 % High -- %

### ECONOMICS:

Total Project Cost..... \$ 4,001,171  
 Cost per sq.ft..... \$ 15.23/s.f.  
 Maintenance per year or month.. \$ 67,900/yr  
 Amortization Period..... 40 years  
 Financing..... FHA 221(d)(3)  
 Vacancy Rate..... 2 %  
 Turnover Rate..... 11%



# WARREN GARDENS

Address: Warren St & Walnut St, Roxbury

Architect: H. Stubbins & Assoc./ Ashley, Myer, Smith

Owner: Beacon Redevelopment Corporation

Date of Completion: Spring, 1968

TYPE OF BUILDING: Row

INCOME: Low

## BUILDING CHARACTERISTICS:

Gross Building Area.....262,700 s.f.

Net Usable Area.....194,670 s.f.

Efficiency Index(Usable/Gross Bldg)..... 79 %

Types of Dwelling Unit in the Building:

Efficiency	22 units	3-BR	180 units
1-BR	13 units	4-BR	12 units
2-BR	0 units	5-BR	0 units

Structural: Wood Frame and Concrete Block

Mechanical: Gas Fired Individual Heater

Services: Washer and Dryer

Building Regulations: none

## DWELLING UNIT CHARACTERISTICS:

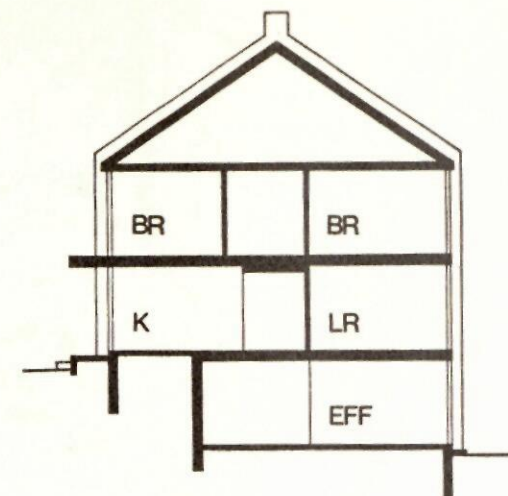
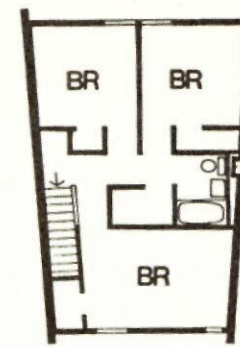
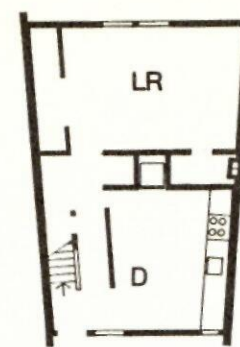
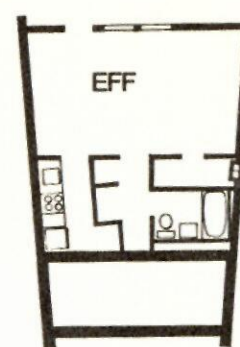
Type of DU	Eff.	1-BR	2-BR	3-BR	4-BR	5-BR
BALCONY	--	--	--	--	--	--
LR	250.0	260.0		210.0	210.0	
DR	(Comb w/ LR)			200.0	200.0	
K	60.0	60.0		(Comb w/DR)		
BR 1	--	150.0		210.0	170.0	
BR 2	--	--		100.0	170.0	
BR 3	--	--		100.0	100.0	
BR 4	--	--		--	100.0	
BR 5	--	--		--	--	
Net Lvg	310.0	470.0		820.0	950.0	
BATH	35.0	35.0		35.0	35.0	
STORAGE	40.0	50.0		150.0	100.0	
OTHERS	--	--		--	--	
Gross Unit	480.0	645.0		1250.0	1425.0	
Net L/G.U.	65 %	72 %		66 %	67 %	
Rent/month	\$ 82-85	\$100		\$135-147	\$155	

Any extra rent for

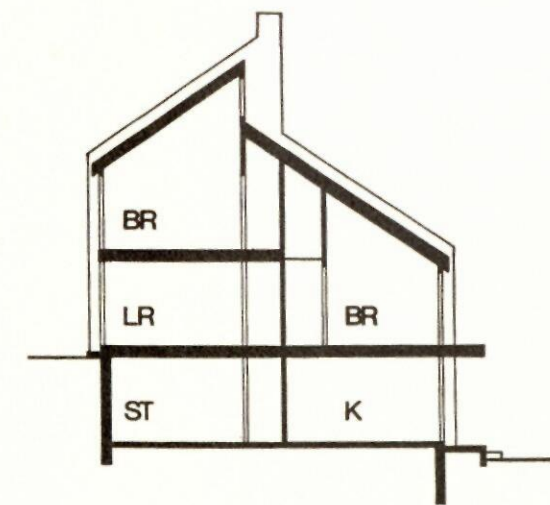
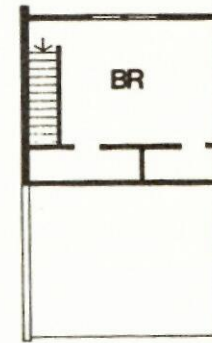
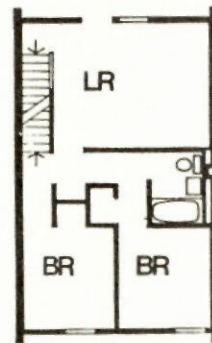
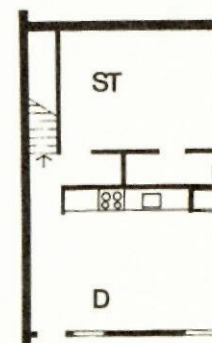
Parking.....none

Recreational Facilities...none

REMARKS:



EFFICIENCY + 3 BEDROOM UNIT



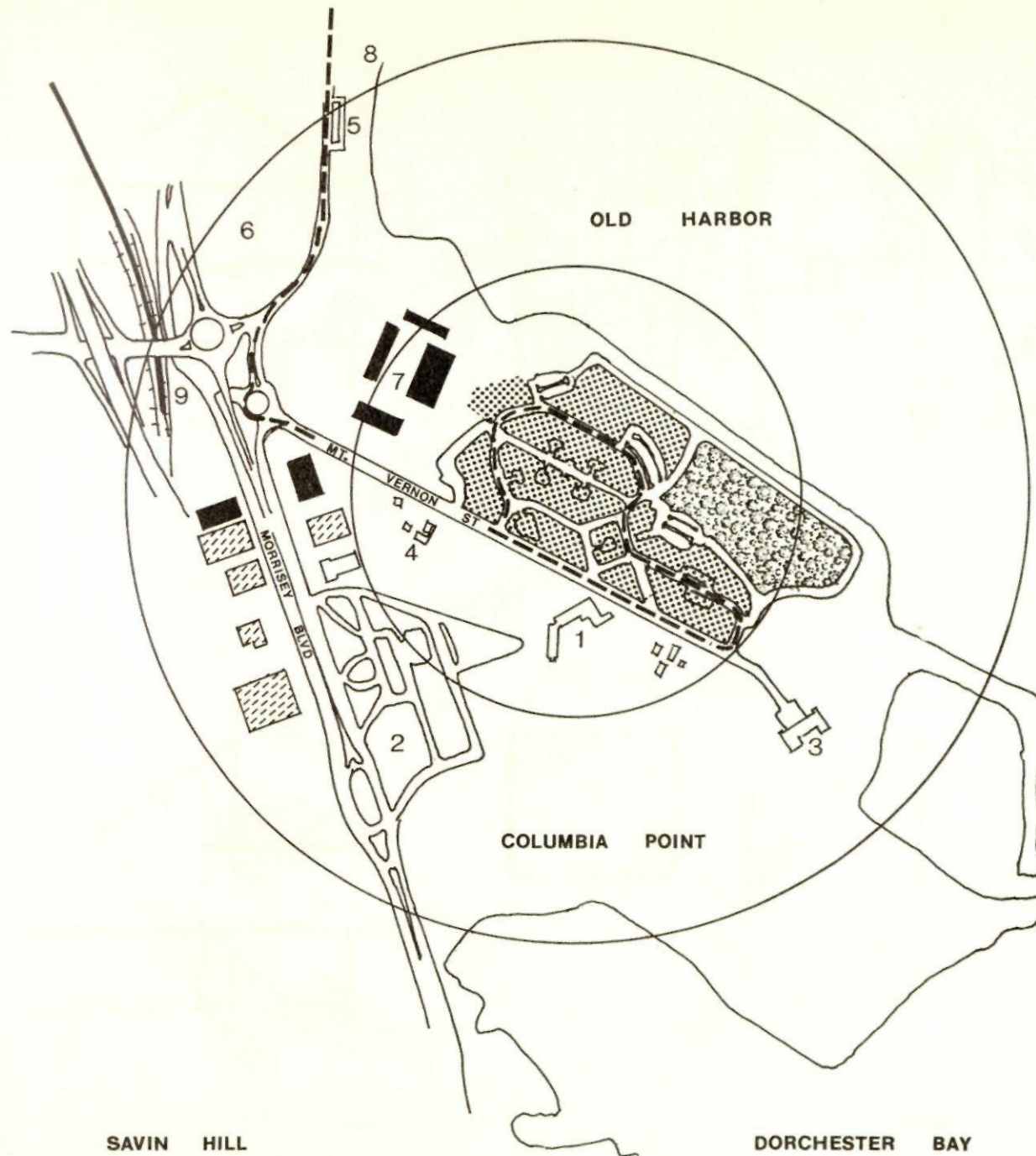
3 BEDROOM UNIT





SOUTH BOSTON - 1 MI.

UPHAMS CORNER - .5 MI.



## COLUMBIA POINT

F

- Columbia Point was one of the first post War Housing projects built in the United States. Located on the reclaimed land, the areas most noticeable feature is its isolation.
- Although many amenities have been added since its construction in 1952, the area remains both physically and socially isolated from the city.

### LAND USE (within 10 min-walk vicinity)

- Commercial (Local retail & service stores)
- Business (Retail business & offices)
- Housing Project Area
- Industrial
- Park/Open Space
- Subway
- Bus/Trolley
- Commuter Train
- Inner Circle--- 5 min-walk
- Outer Circle--- 10 min-walk

### NAME OF THE HOUSING PROJECT IN THE NEIGHBORHOOD:

Columbia Point

### FACILITIES IN THE NEIGHBORHOOD:

- (1) Elementary School
- (2) High School
- (3) Clinic
- (4) Church
- (5) Police
- (6) Saunders Stadium
- (7) Shopping Center
- (8) Public Beach
- (9) Mass Bay Transportation Authority



# COLUMBIA POINT

Address: Columbia Point, Dorchester

Architect: M. A. Dyer

Owner: Boston Housing Authority

Date of Completion: Spring, 1954

## SITE CHARACTERISTICS:

Total Site Area.....51.1 acre  
 Total Building Coverage..... 226,000 s.f.  
 Bldg. Coverage / Site Area.....13.2 %  
 People / Acre.....120  
 Dwelling Unit / Acre.....30  
 Parking: Structure.....none  
           On Grade.....165,000 s.f.  
 Parking / Dwelling Unit.....1/1  
 Open Space: For People.....1,471,000 s.f.  
                     For Auto..... 455,000 s.f.

## FACILITIES ON THE SITE:

- (X)-- Nursery
- (X)-- Daycare Center
- (X)-- Doctors/Dentists
- ( )-- Grocery Store
- (X)-- Playground
- (X)-- Tennis Court
- (X)-- Basketball Court
- ( )-- Swimming Pool
- (X)-- Community Hall

## BUILDING TYPES ON THE SITE:

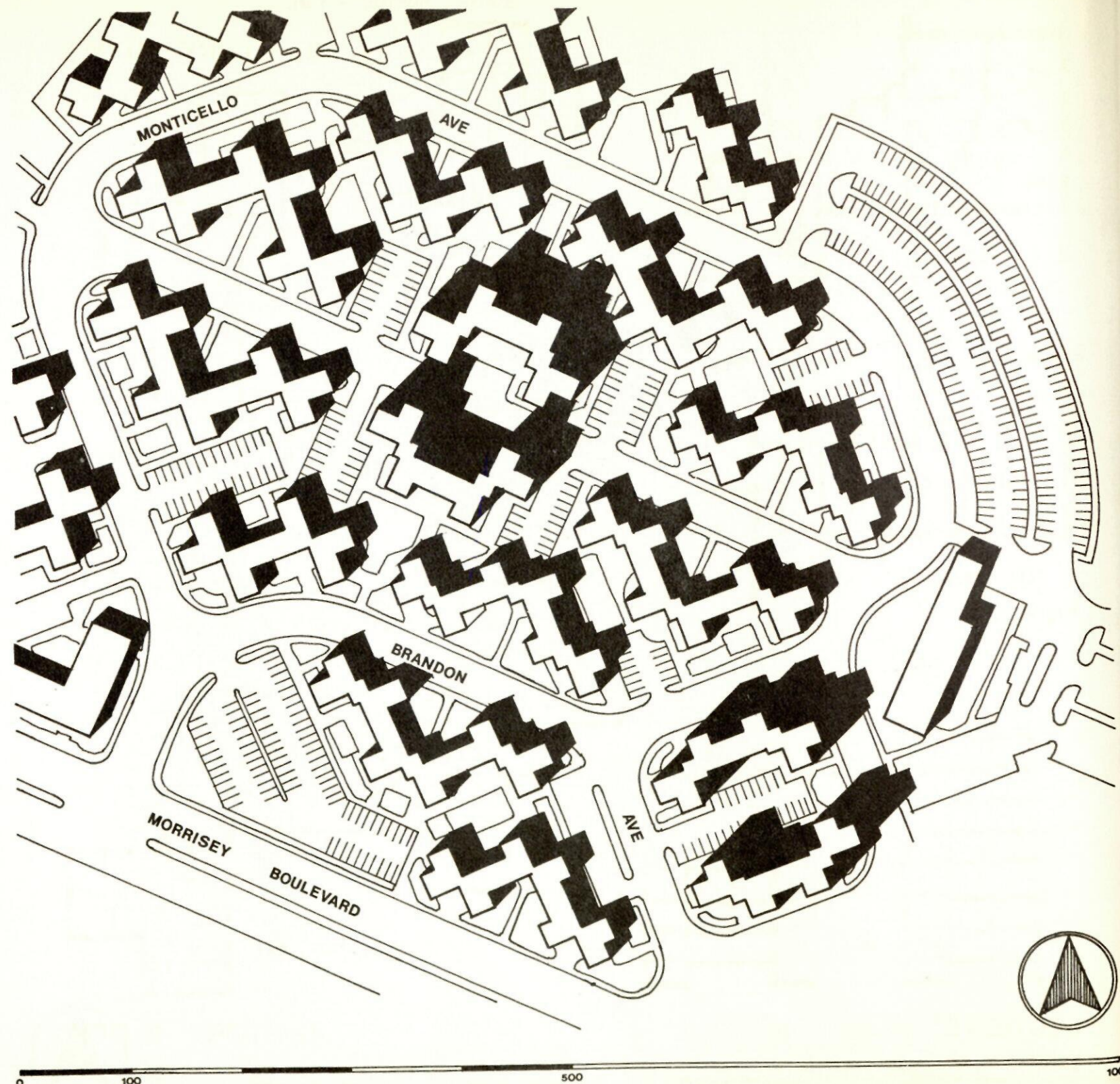
- (A) Tower ( 7 stories).....
- (B) Slab (    stories)..... none
- (C) Walkup ( 3 stories).....
- (D) Row ..... none
- (E) Other..... none

## PEOPLE:

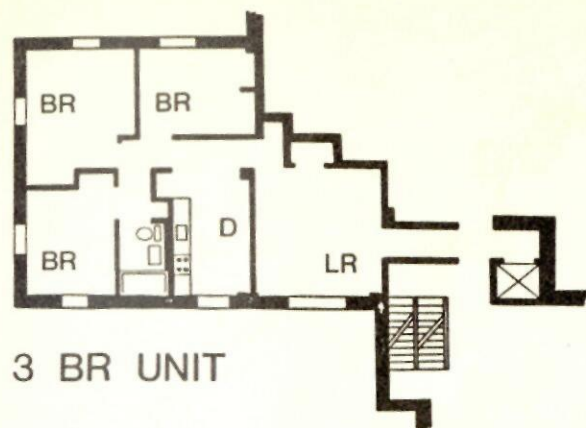
White..... 15 %  
 Non-White..... 85 %  
 Income Groups: Welfare 45 % Low 55 %  
                     Middle -- % High -- %

## ECONOMICS:

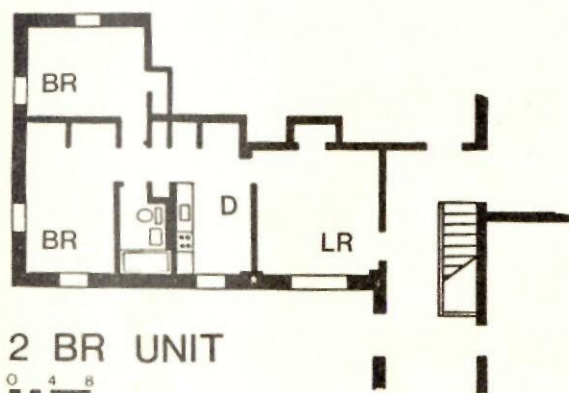
Total Project Cost..... \$ 22,000,000  
 Cost per sq.ft..... not available  
 Maintenance per year or month.. \$ 950,000/yr  
 Amortization Period..... not available  
 Financing..... City, State, Federal  
 Vacancy Rate..... 10 %  
 Turnover Rate..... not available



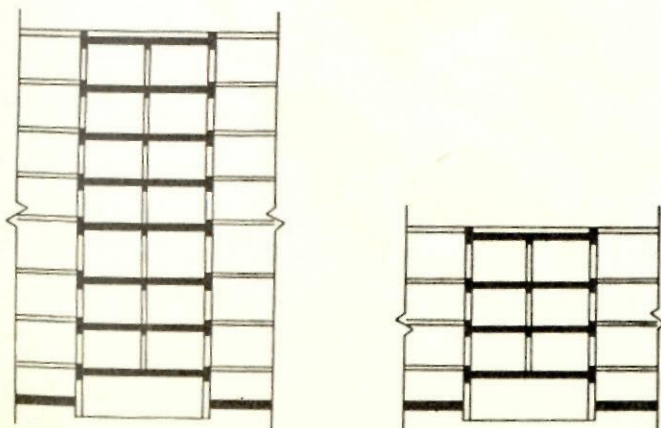




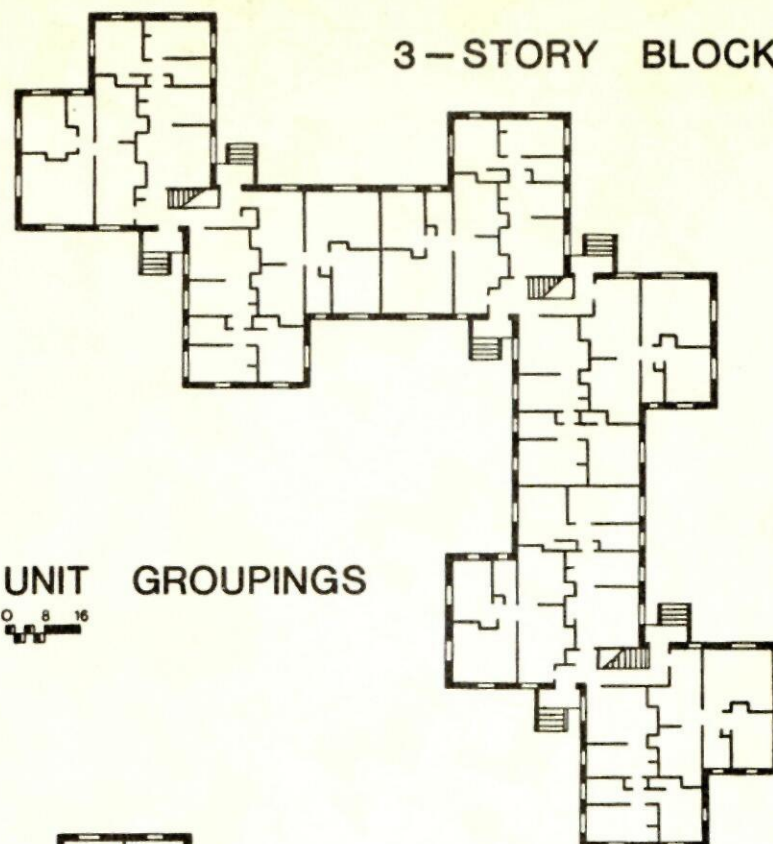
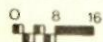
3 BR UNIT



2 BR UNIT

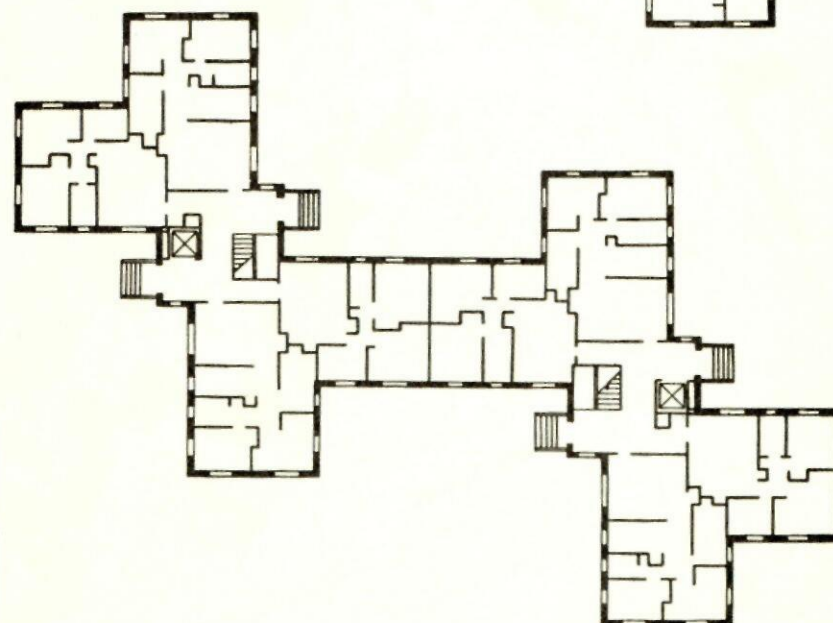


SECTIONS



3-STORY BLOCK

UNIT GROUPINGS



7-STORY BLOCK

## COLUMBIA POINT

Address: Columbia Point, Dorchester

Architect: M. A. Dyer

Owner: Boston Housing Authority

Date of Completion: Spring, 1954

TYPE OF BUILDING: Tower & Walk-up

INCOME: Low

### BUILDING CHARACTERISTICS:

Gross Building Area.....1,065,250 s.f.

Net Usable Area..... 838,000 s.f.

Efficiency Index(Usable/Gross Bldg).....78 %

Types of Dwelling Unit in the Building:

Efficiency -- units 3-BR 496 units

1-BR 196 units 4-BR 180 units

2-BR 584 units 5-BR 48 units

Structural: Poured Concrete Slab & Concrete

Mechanical: Hot Water Heating

Services: none

Building Regulations: none

### DWELLING UNIT CHARACTERISTICS:

Type of DU	Eff.	1-BR	2-BR	3-BR	4-BR	5-BR
BALCONY			--	--		
LR			144.0	162.0		
DR			70.0	100.0		
K			(Comb w/DR)			
BR 1			108.0	132.0		
BR 2			102.0	100.0		
BR 3			--	109.0		
BR 4			--	--		
BR 5			--	--		
Net Lvg			424.0	603.0		
BATH			35.0	35.0		
STORAGE			54.0	41.0		
OTHERS			80.0	91.0		
Gross Unit			593.0	770.0		
Net L/G.U.			71 %	78.5%		
Rent/month			(not avail.)			

Any extra rent for

Parking.....none

Recreational Facilities...none

### REMARKS:











## FENWAY, BROOKLINE

G

- The Brookline district has one of the highest per capita income levels in the Boston Metropolitan Area. The neighborhood of Fenway in Brookline consists of middle and high income people.
- The major ethnic group in Brookline is Irish Catholics.
- The south-west section of Brookline is composed of large estates and private residences; the north-east section of the district is composed of higher densities of predominantly single family houses with many open spaces scattered throughout.

### LAND USE (Within 10 min-walk vicinity):

-  Commercial (Local retail & service store)
-  Business (Retail business & offices)
-  Residential
-  Housing Project Area
-  Industrial
-  Park/Open Space
-  Subway
-  Bus/Trolley
-  Commuter Train

Inner Circle----- 5 min-walk

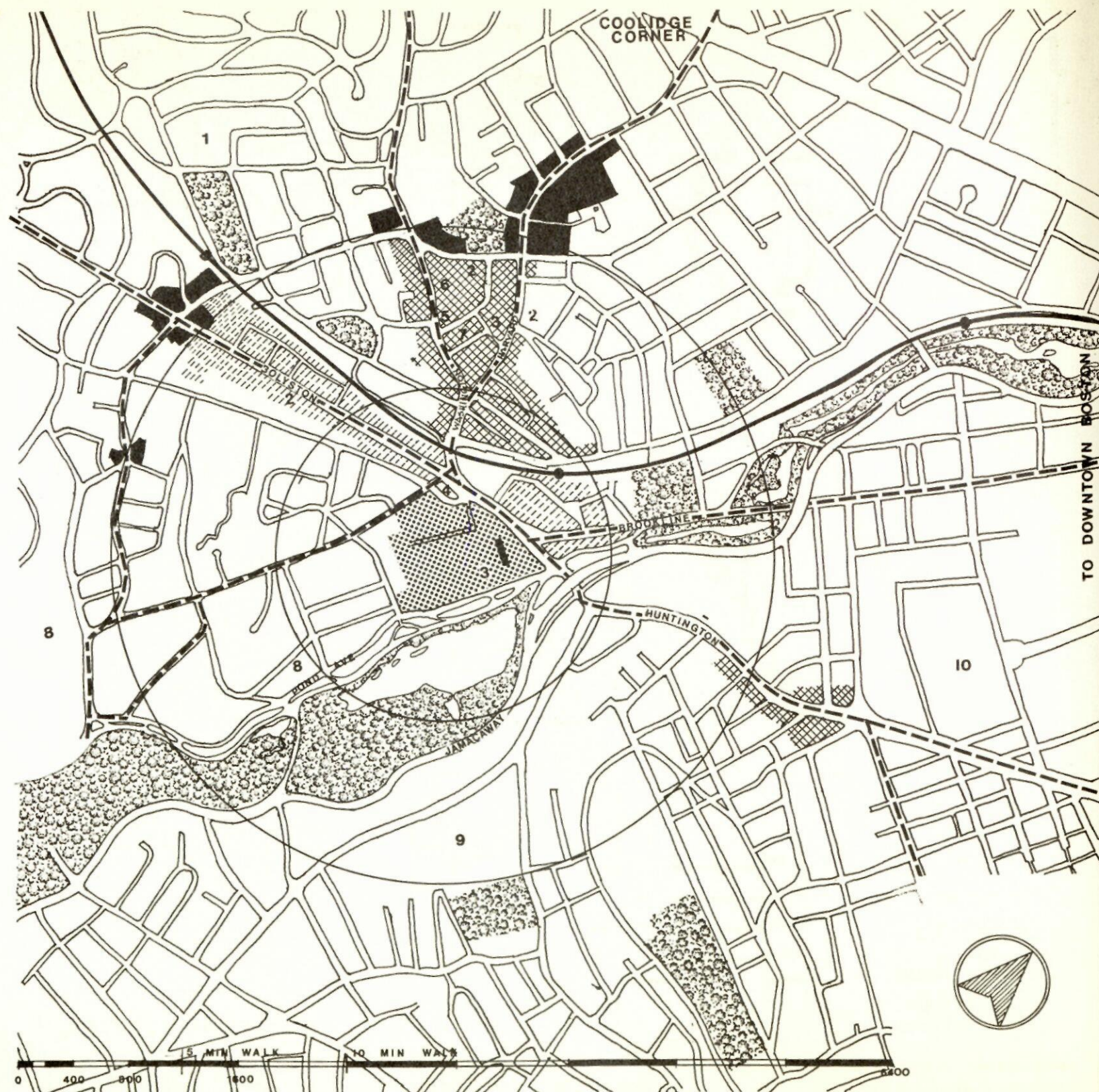
Outer Circle----- 10 min-walk

### NAME OF THE HOUSING PROJECT IN THE NEIGHBORHOOD:

- The Brook House.....(A)
- Co-op.....(B)
- Public Housing.....(C)

### FACILITIES IN THE NEIGHBORHOOD:

- (1) High School
- (2) Elementary & Junior High School
- (3) Fire Station
- (4) Police
- (5) Library
- (6) City Hall
- (7) Hospital
- (8) Veterans Administration Hospital
- (9) Harvard Medical School





WASHINGTON ST

HIGH ST

POND AVE

- 1 LOW INCOME
- 2 MIDDLE INCOME
- 3 HIGH INCOME

0 25 50 100

400



## THE BROOK HOUSE

Address: Washington St & Pond Ave, Brookline  
 Architect: Chloethiel Woodard Smith & Associates  
 with another Architectural Firm in Boston  
 Owner: see the individual building  
 Date of Completion: see the individual building

### SITE CHARACTERISTICS:

Total Site Area..... 15.6 acre  
 Total Building Coverage..... 155,000 s.f.  
 Bldg. Coverage / Site Area..... 142  
 People / Acre..... 63  
 Dwelling Unit / Acre..... 24.3 %  
 Parking: Structure..... 270,000 s.f.  
           On Grade..... 30,000 s.f.  
 Parking / Dwelling Unit..... 1.1/1  
 Open Space: For People..... 457,000 s.f.  
               For Auto..... 46,000 s.f.

### FACILITIES ON THE SITE:

( ) -- Nursery  
 ( ) -- Daycare Center  
 (X) -- Doctors/Dentists....(D)  
 (X) -- Grocery Store.....(GS)  
 (X) -- Playground.....(PL)  
 (X) -- Tennis Court.....(TC)  
 (X) -- Basketball Court....(BC)  
 (X) -- Swimming Pool.....(SP)  
 (X) -- Community Hall.....(CH)

### BUILDING TYPES ON THE SITE:

(A) Tower ( stories).....none  
 (B) Slab (8-14 stories).....5  
 (C) Walkup (2-4 stories).....5  
 (D) Row .....1  
 (E) Other .....none

### PEOPLE:

White..... 99 %  
 Non-White..... 1 %  
 Income Groups: Welfare -- % Low 12.5 %  
                           Middle 12.5 % High 75 %

### ECONOMICS:

	Public	Co-op	Brook House
Total Project Cost....	(not available)	(not available)	\$ 22.0M
Cost per sq.ft.....	(not available)	(not available)	\$ 24.50
Maintenance per year..\$110,000	--	--	--
Amortization Period... 40 yrs	40 yrs	40 yrs	--
Financing.....37 H.Act	FHA 221d3	FHA 220	--
Vacancy Rate..... 6 %	1 %	--	--
Turnover Rate..... 3 %	3 %	--	--



# THE BROOK HOUSE

Address: Washington St & Pond Ave, Brookline

Architect: Choelthiel Woodard Smith & Associates

Owner: The Farm Development, a joint venture

Date of Completion: Spring, 1969

TYPE OF BUILDING: Slab

INCOME: High

## BUILDING CHARACTERISTICS:

Gross Building Area (without garage)....902,000 s.f.

Net Usable Area.....810,900 s.f.

Efficiency Index(Usable/Gross Bldg)..... 89 %

Types of Dwelling Unit in the Building:

Efficiency 145 units 3-BR 42 units

1-BR 401 units 4-BR -- units

2-BR 174 units 5-BR -- units

Structural: Slab Concrete

Mechanical: Hot Water Heating, Air Conditioning

Services: Doorman, Laundry, Incinerator

Building Regulations: No Graduate Students

## DWELLING UNIT CHARACTERISTICS:

Type of DU	Eff.	1-BR	2-BR	3-BR	4-BR	5-BR
BALCONY	--	40.5	47.0	46.0		
LR	305.0	208.0	225.0	240.0		
DR	--	104.0	112.0	120.0		
K	48.0	72.0	98.0	94.0		
BR 1	--	187.0	205.0	200.0		
BR 2	--	--	205.0	166.0		
BR 3	--	--	--	208.0		
BR 4	--	--	--	--		
BR 5	--	--	--	--		
Net Lvg	353.0	611.5	892.0	1074.0		
BATH	35.0	45.0	88.0	90.0		
STORAGE	41.0	45.0	100.0	104.0		
OTHERS	30.0	32.0	87.0	170.0		
Gross Unit	459.0	733.5	1167.0	1538.0		
Net L/G.U.	73 %	84 %	76 %	71 %		
Rent/month	\$180- 225	\$245- 295	\$310- 375	\$450- 475		

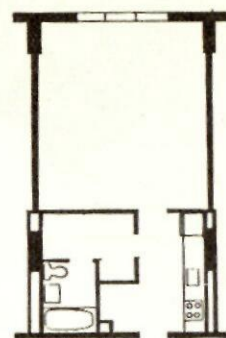
Any extra rent for

Parking..... \$ 35/month

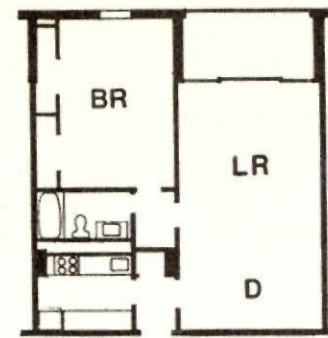
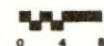
Recreational Facilities... \$ 25/season (pool,sauna)

## REMARKS:

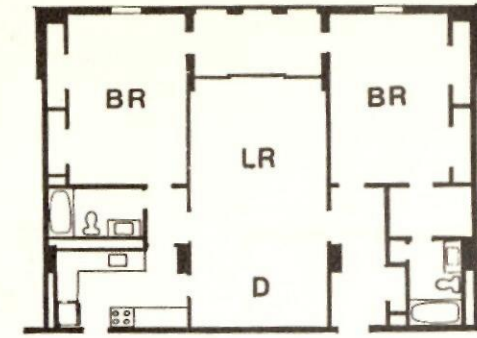
Retail stores within the building: restaurant-bar, barber shop, beauty parlor, doctors offices, dry-cleaners, grocery store, drug store, flower shop, candy & soda fountain store.



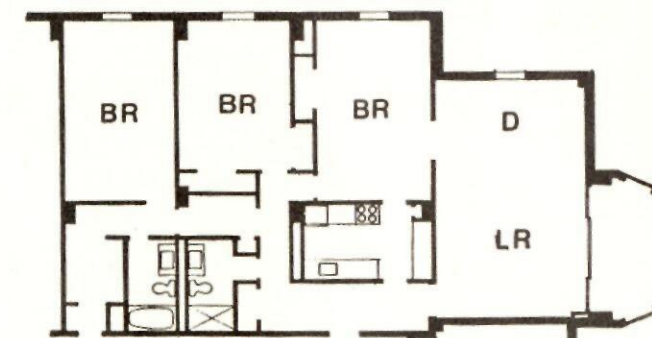
EFF UNIT



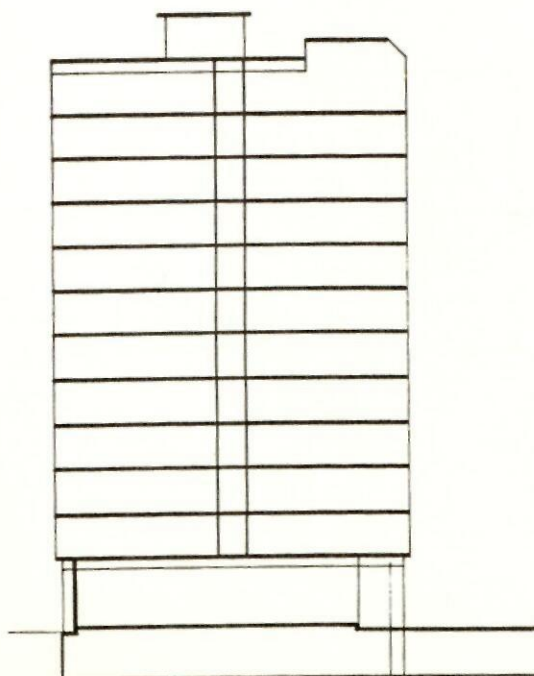
1 BR UNIT



2 BR UNIT



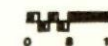
3 BR UNIT



SECTION



UNIT BLOCK





# THE BROOK HOUSE

Address: Washington St & Pond Ave, Brookline  
 Architect: Chloethiel Woodard Smith & Associates  
 with another Architectural Firm in Boston  
 Owner: Co-operative Society  
 Date of Completion: Spring, 1966

TYPE OF BUILDING: Walk-up

INCOME: Middle

## BUILDING CHARACTERISTICS:

Gross Building Area.....122,400 s.f.  
 Net Usable Area..... 88,900 s.f.  
 Efficiency Index(Usable/Gross Bldg)..... 71 %

Types of Dwelling Unit in the Building:

Efficiency	7 units	3-BR	18 units
1-BR	35 units	4-BR	-- units
2-BR	56 units	5-BR	-- units

Structural: Masonry and Woodframe

Mechanical: Forced Hot Water Heating

Services: Laundry, dumpster

Building Regulations: none

## DWELLING UNIT CHARACTERISTICS:

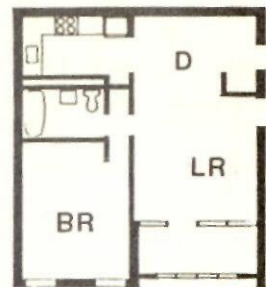
Type of DU	Eff.	1-BR	2-BR	3-BR	4-BR	5-BR
BALCONY		55.0	55.0	90.0		
LR		150.0	150.0	250.0		
DR		68.0	68.0	96.0		
K		63.0	68.0	60.0		
BR 1		120.0	134.0	83.0		
BR 2		--	104.0	104.0		
BR 3		--	--	142.0		
BR 4		--	--	--		
BR 5		--	--	--		
Net Lvg		456.0	579.0	825.0		
BATH		40.0	34.0	42.0		
STORAGE		28.0	34.0	28.0		
OTHEPS		24.0	65.0	53.0		
Gross Unit		548.0	714.0	948.0		
Net L/G.U.		88 %	82 %	87 %		
Rent/month	\$86	\$118	\$126	\$136		

Any extra rent for

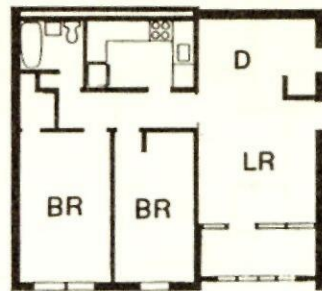
Parking..... none

Recreational Facilities... none

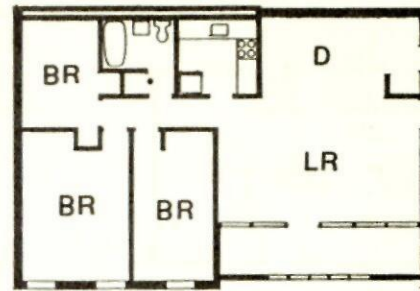
REMARKS:



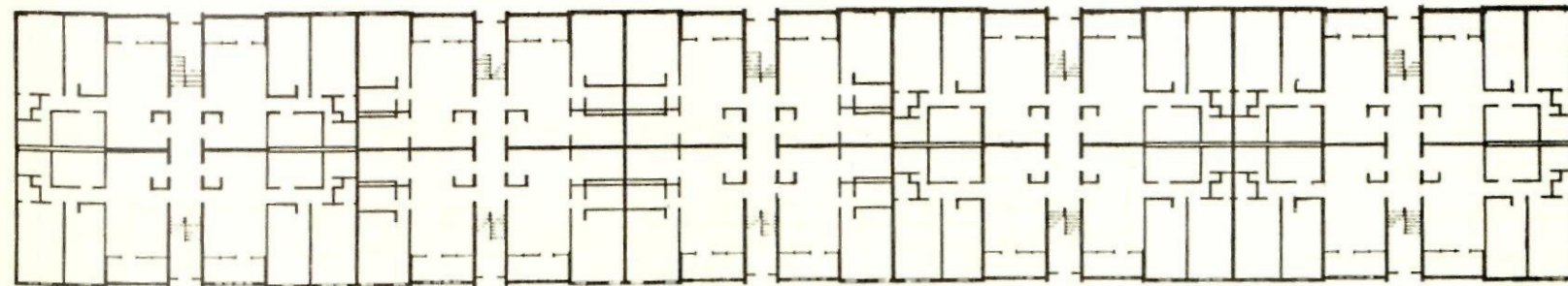
1 BR UNIT



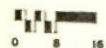
2 BR UNIT



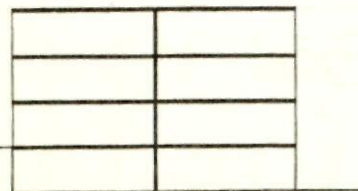
3 BR UNIT



UNIT BLOCK



SECTION





# THE BROOK HOUSE

Address: Washington St & Pond Ave, Brookline

Architect: An Architectural Firm in Boston

Owner: Brookline Housing Authority

Date of Completion: Spring, 1962

TYPE OF BUILDING: Slab

INCOME: Low

## BUILDING CHARACTERISTICS:

Gross Building Area.....26,200 s.f.

Net Usable Area.....23,200 s.f.

Efficiency Index(Usable/Gross Bldg)..... 80 %

Types of Dwelling Unit in the Building:

Efficiency -- units 3-BR 4 units

1-BR 36 units 4-BR -- units

2-BR 28 units 5-BR -- units

Structural: Block & Wood joists

Mechanical: Forced Hot Water Heating

Services: Laundry, Incinerator

Building Regulations: none

## DWELLING UNIT CHARACTERISTICS:

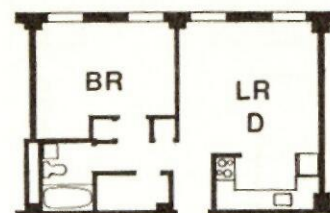
Type of DU	Eff.	1-BR	2-BR	3-BR	4-BR	5-BR
BALCONY		--	--	--		
LR		170.0	172.0	170.0		
DR			30.0	55.0		
K		52.0	50.0	72.0		
BR 1		135.0	115.0	105.0		
BR 2		--	145.0	105.0		
BR 3		--	--	128.0		
BR 4		--	--	--		
BR 5		--	--	--		
Net Lvg		361.0	504.0	623.0		
BATH		35.0	35.0	43.0		
STORAGE		33.0	31.0	34.0		
OTHERS		44.0	84.0	65.0		
Gross Unit		473.0	654.0	765.0		
Net L/G.U.		77 %	77 %	82 %		
Rent/month		\$80-100	\$82-121	\$99-132		

Any extra rent for

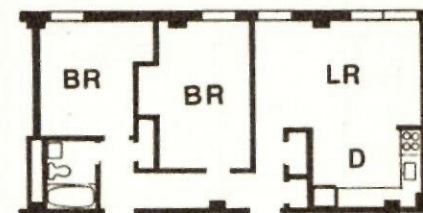
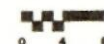
Parking..... none

Recreational Facilities... none

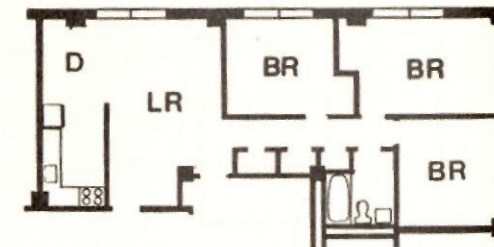
REMARKS:



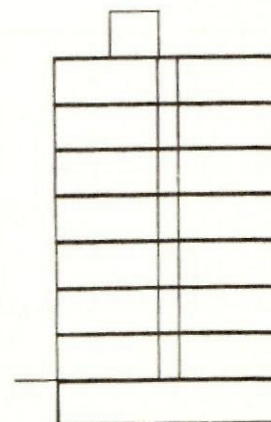
1 BR UNIT



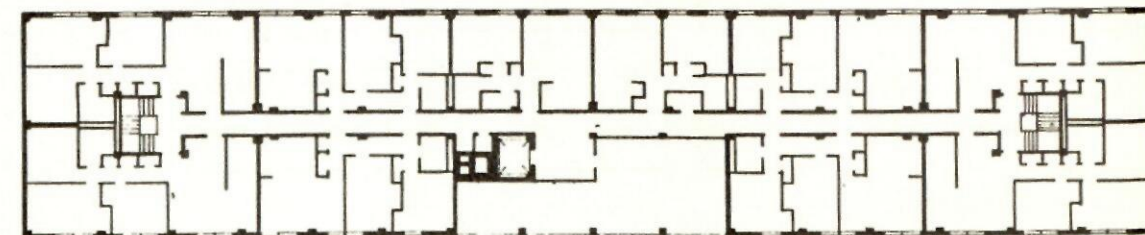
2 BR UNIT



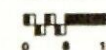
3 BR UNIT



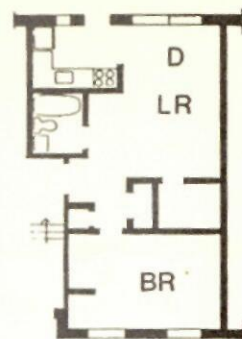
SECTION



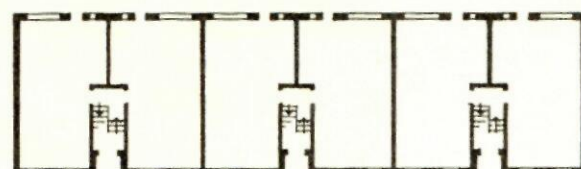
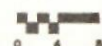
UNIT BLOCK



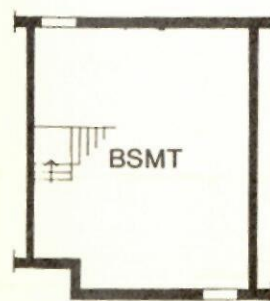
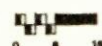




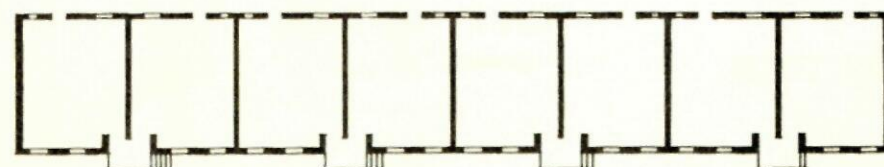
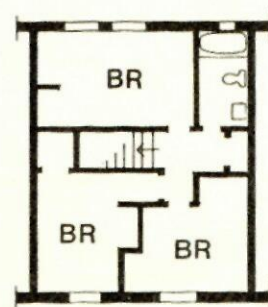
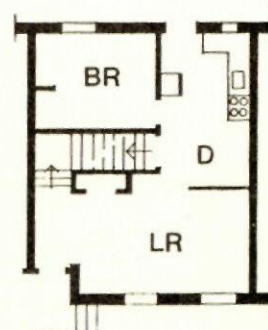
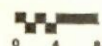
UNIT for the ELDERLY



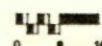
UNIT BLOCK



4 BR UNIT



UNIT BLOCK



## THE BROOK HOUSE

Address: Washington St & Pond Ave, Brookline

Architect: An Architectural Firm in Boston

Owner: Brookline Housing Authority

Date of Completion: Spring, 1962

TYPE OF BUILDING: Walk-up

INCOME: Low

### BUILDING CHARACTERISTICS:

Gross Building Area..... 78,400 s.f.

Net Usable Area..... 66,400 s.f.

Efficiency Index(Usable/Gross Bldg)..... 80 %

Types of Dwelling Unit in the Building:

Elderly 24 units 3-BR -- units

1-BR -- units 4-BR 8 units

2-BR -- units 5-BR -- units

Structural: Slab-concrete

Mechanical: Forced Hot Water Heating

Services: Laundry, Incinerator

Building Regulations: None

### DWELLING UNIT CHARACTERISTICS:

Type of DU	Eld.	1-BR	2-BR	3-BR	4-BR	5-BR
BASEMENT	--				500.0	
LR	166.0				170.0	
DR	--				59.0	
K	52.0				81.0	
BR 1	108.0				95.0	
BR 2	--				90.0	
BR 3	--				96.0	
BR 4	--				128.0	
BR 5	--				--	
Net Lvg	326.0				1319.0	
BATH	30.0				45.0	
STORAGE	63.0				90.0	
OTHERS	20.0				140.0	
Gross Unit	439.0				1594.0	
Net L/G.U.	74 %				83 %	
Rent/month	\$80-100				\$102-132	

Any extra rent for

Parking.....none

Recreational Facilities...none

### REMARKS:

Two rooms in the basement are used as a day care center or as a meeting room for group functions.











## PARKER HILL

H

- The Parker Hill neighborhood is composed of middle and lower middle income group of ethnically mixed families. The Charlesbank Apartments are surrounded by Harvard Medical School on one side and multi-family residential area on the other.
- The terrain of the neighborhood is generally hilly and the Backbay Fens (green open space) is within 10 min-walking distance.

### LAND USE (within 10 min-walk vicinity)

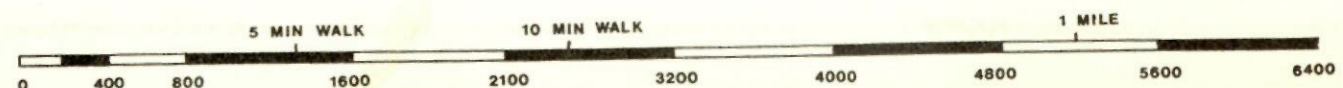
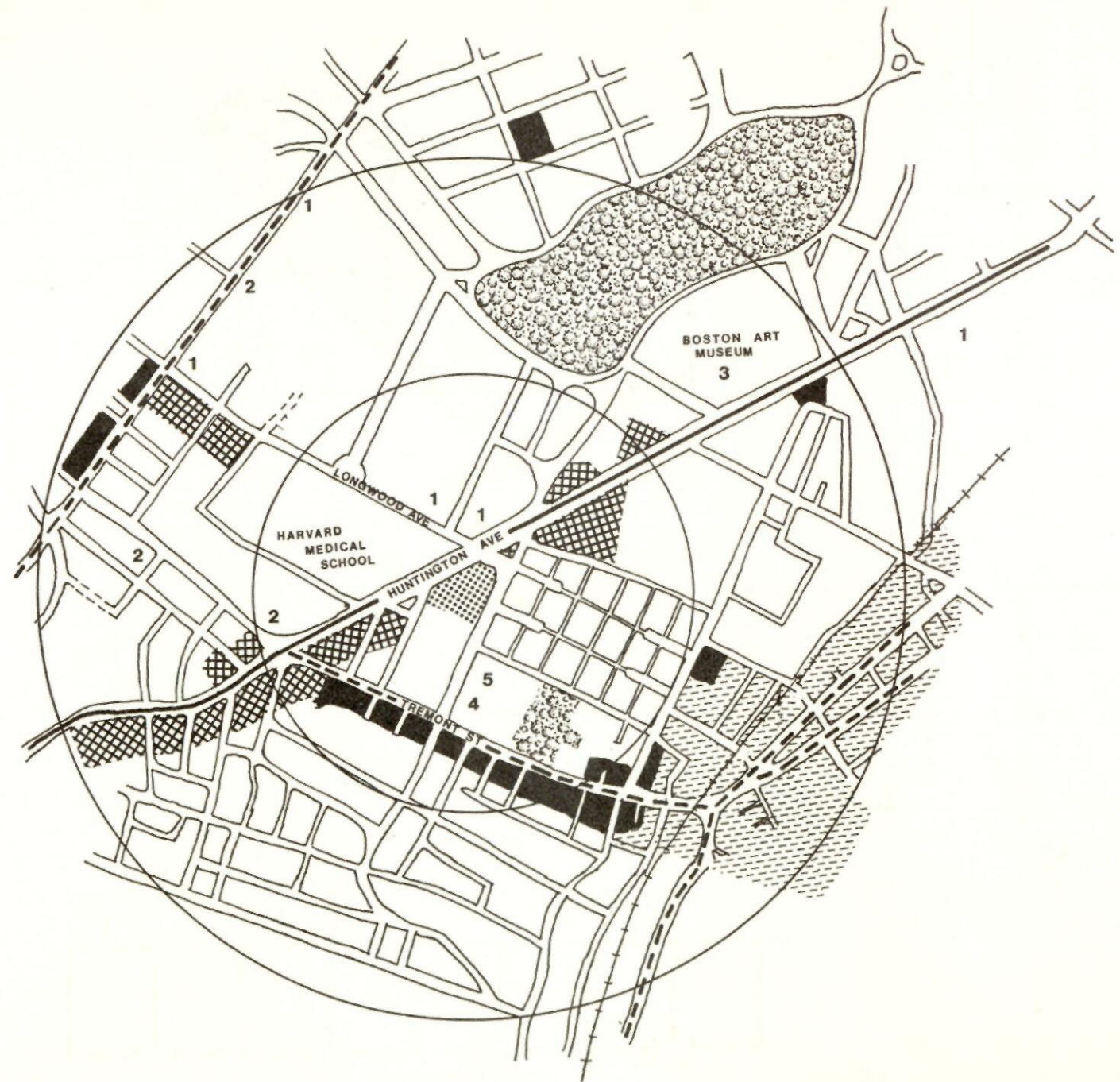
-  Commercial (Local retail & service stores)
-  Business (Retail business & offices)
-  Residential
-  Housing Project Area
-  Industrial
-  Park/Open Space
-  Subway
-  Bus/Trolley
- Inner Circle--- 5 min-walk
- Outer Circle--- 10 min-walk

### NAME OF THE HOUSING PROJECT IN THE NEIGHBORHOOD:

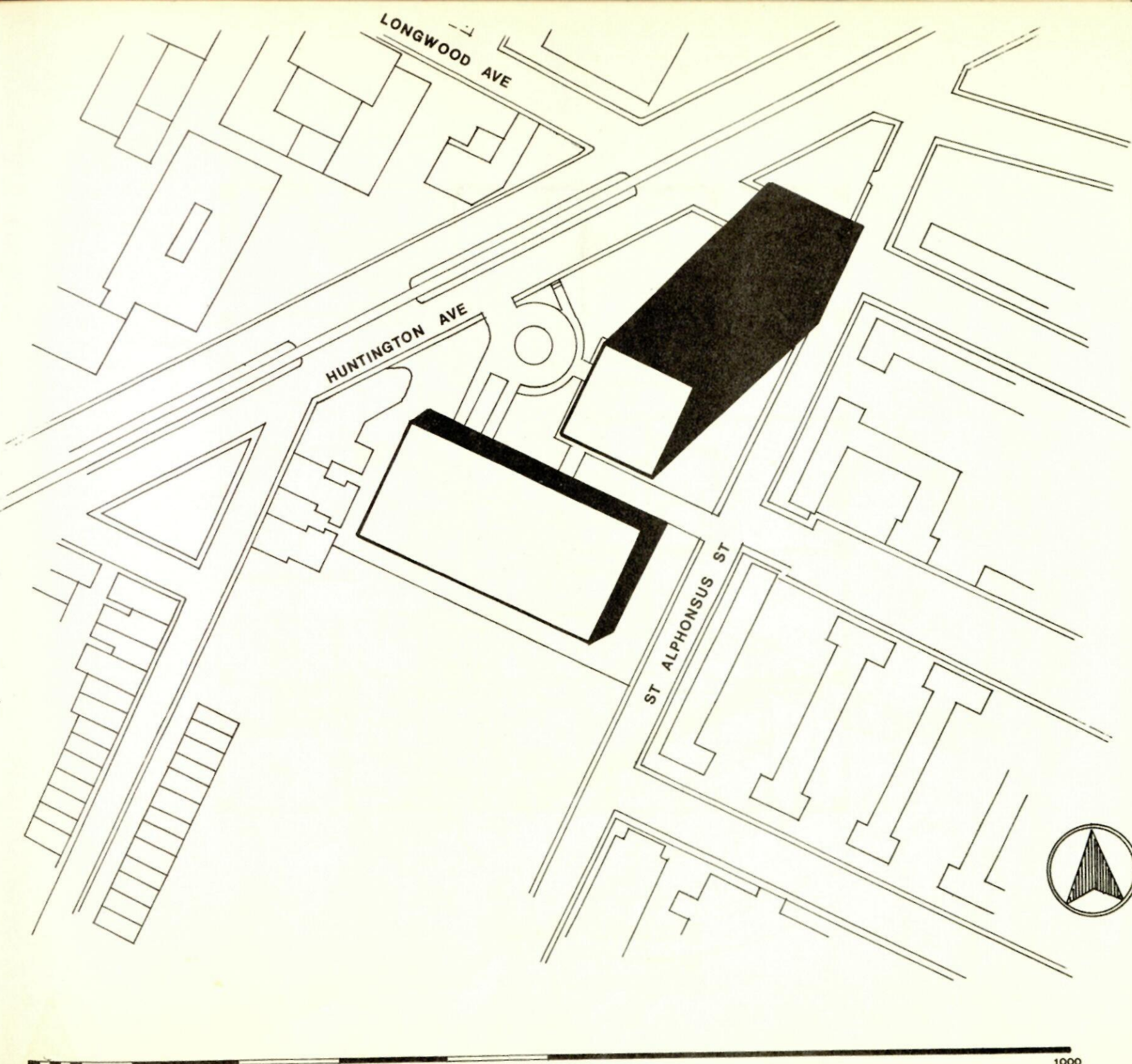
Charlesbank Apartments

### FACILITIES IN THE NEIGHBORHOOD:

- (1) College
- (2) Hospital
- (3) Museum
- (4) Church
- (5) Elementary School







## CHARLES BANK APTS.

Address: Huntington & Longwood Ave.

Architect: Hugh Stubbins & Associates

Owner: Miles Realty

Date of Completion: Winter, 1962

### SITE CHARACTERISTICS:

Total Site Area.....	2.3 acre
Total Building Coverage.....	9,650 s.f.
Bldg. Coverage / Site Area.....	9.7 %
People / Acre.....	180
Dwelling Unit / Acre.....	120
Parking: Structure.....	58,560 s.f.
On Grade.....	none
Parking / Dwelling Unit.....	1.3/1
Open Space: For People.....	10,900 s.f.
For Auto.....	21,900 s.f.

### FACILITIES ON THE SITE:

( ) -- Nursery	
( ) -- Daycare Center	
( ) -- Doctors/Dentists	None available
( ) -- Grocery Store	
( ) -- Playground	
( ) -- Tennis Court	
( ) -- Basketball Court	
( ) -- Swimming Pool	
( ) -- Community Hall	

### BUILDING TYPES ON THE SITE:

(A) Tower ( 24 stories).....	1
(B) Slab (     stories).....	none
(C) Walkup (     stories).....	none
(D) Row .....	none
(E) Other.....	none

### PEOPLE:

White.....	n.a.	%
Non-White.....	n.a.	%
Income Groups: Welfare --	1/2	Low -- 1/2
Middle 100 %		High -- 1/2

### ECONOMICS:

Total Project Cost.....	\$ 3,944,300
Cost per sq.ft.....	\$ 16.95/sq.ft.
Maintenance per year or month..	\$ 36,000
Amortization Period.....	40 years
Financing.....	FHA 221(d)(3)
Vacancy Rate.....	0 %
Turnover Rate.....	10.8 %



# CHARLES BANK APTS.

Address: Huntington & Longwood Ave

Architect: Hugh Stubbins & Associates

Owner: Niles Realty

Date of Completion: Winter, 1962

TYPE OF BUILDING: Tower

INCOME: Middle

## BUILDING CHARACTERISTICS:

Gross Building Area (without garage).... 230,500 s.f.

Net Usable Area..... 184,000 s.f.

Efficiency Index(Usable/Gross Bldg)..... 84 %

Types of Dwelling Unit in the Building:

Efficiency	184 units	3-BR	-- units
1-BR	92 units	4-BR	-- units
2-BR	-- units	5-BR	-- units

Structural: Reinforced Concrete

Mechanical: Hot Water Heating

Services: Laundry, Incinerator

Building Regulations: none

## DWELLING UNIT CHARACTERISTICS:

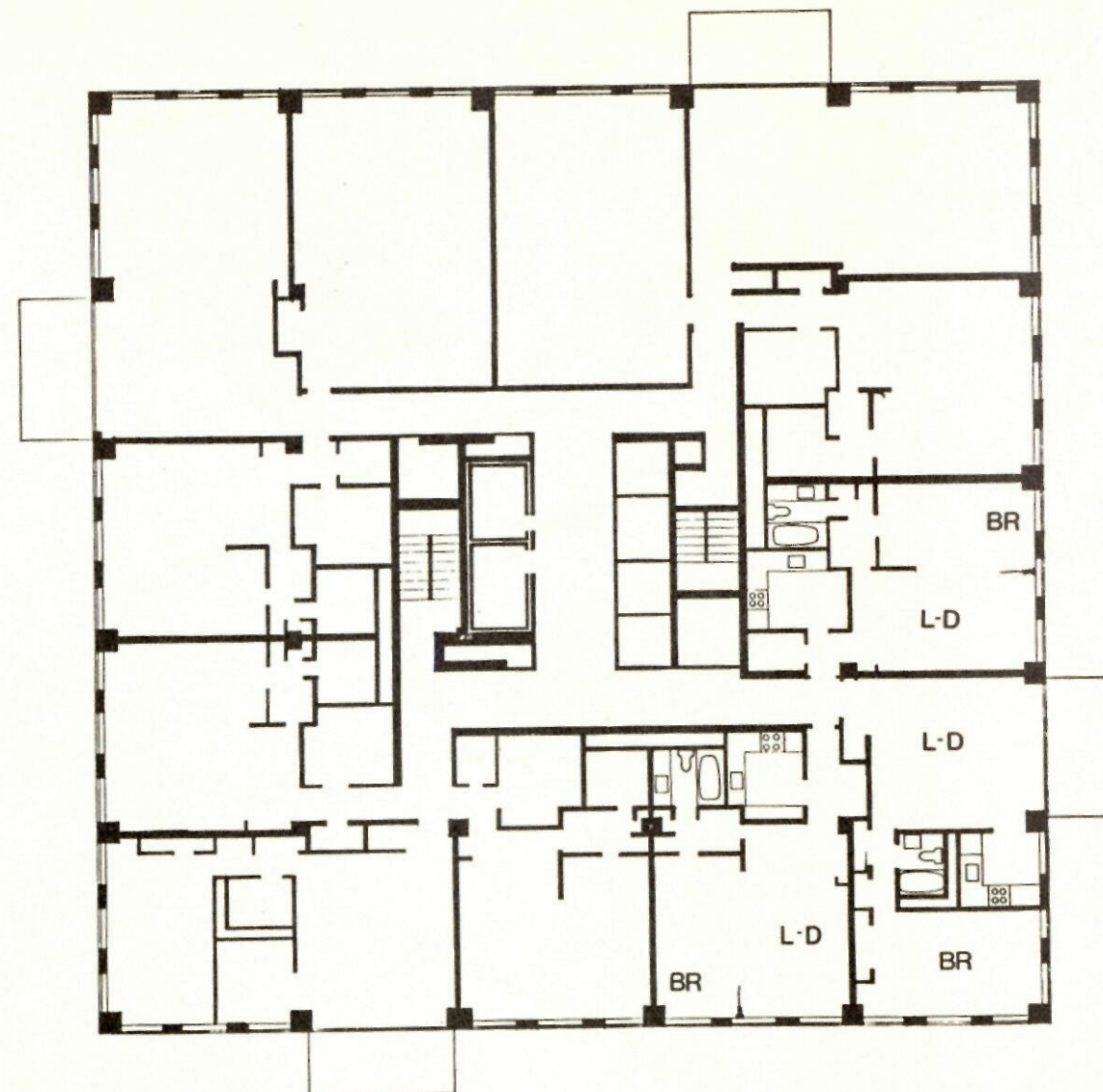
Type of DU	Eff.	1-BR	2-BR	3-BR	4-BR	5-BR
BALCONY	--	37.5				
LR	420.0	270.0				
DR	(Comb w/LR)					
K	60.0	60.0				
BR 1	--	170.0				
BR 2	--	--				
BR 3	--	--				
BR 4	--	--				
BR 5	--	--				
Net Lvg	480.0	537.5				
BATH	42.0	35.0				
STORAGE	(not avail)					
OTHERS	173.0	210.0				
Gross Unit	695.0	782.5				
Net L/G.U.	67 %	66 %				
Rent/month	\$117- 165	\$150- 215				

Any extra rent for

Parking.....\$ 15-20 per month

Recreational Facilities...none

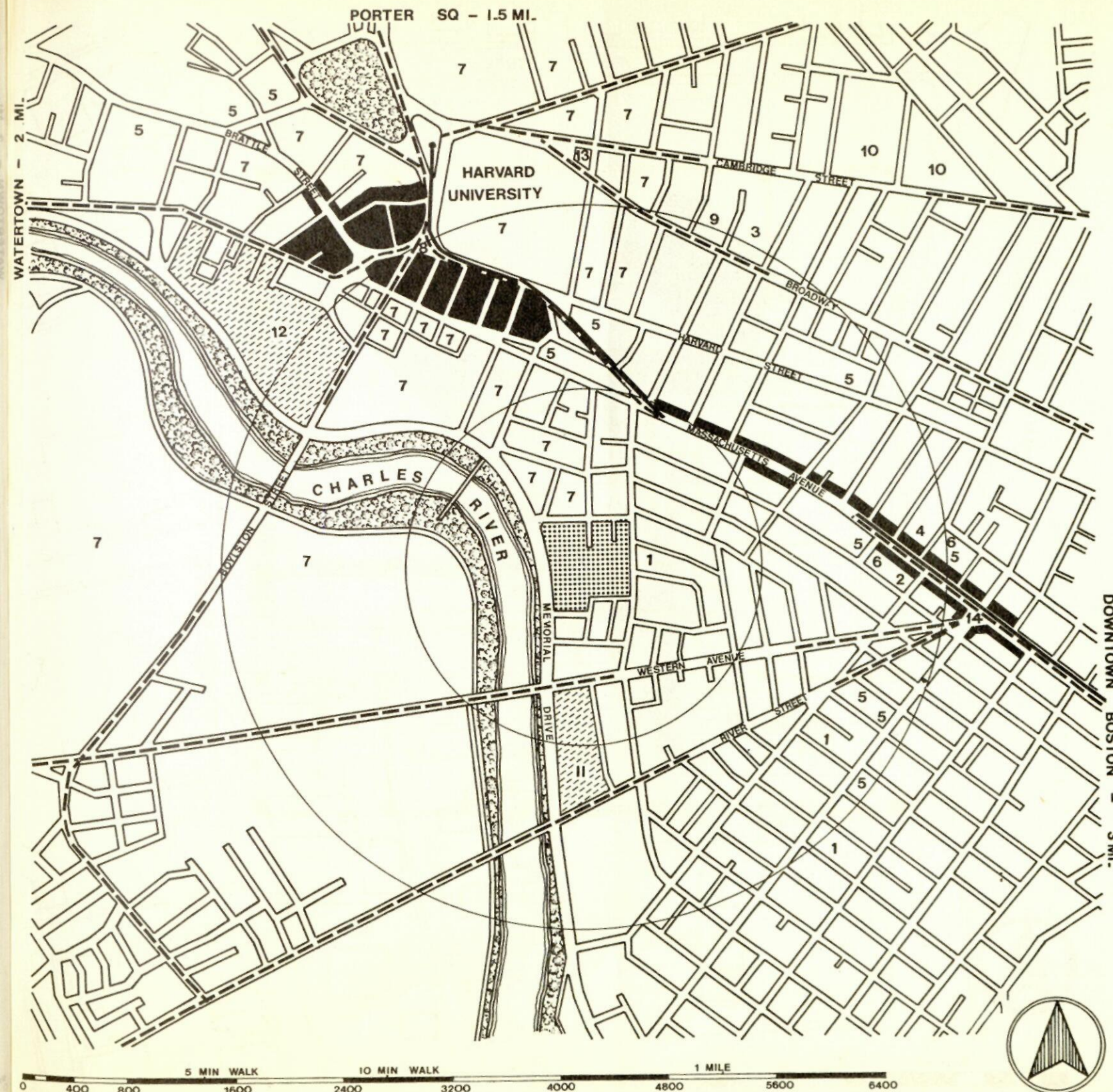
REMARKS:



BUILDING PLAN







## CAMBRIDGE

- The neighborhood of Peabody Terrace in Cambridge consists mainly of middle income and private off-campus student housing of Harvard University, Boston University, and M.I.T.
- The majority of people in this neighborhood are associated with Harvard University which with its many diverse academic activities and historic background is the major focal point of the area.

### LAND USE (within 10 min-walk vicinity)

- Commercial (Local retail & service stores)
- Business (Retail business & offices)
- Residential
- Housing Project Area
- Industrial
- Park/Open Space
- Subway
- Bus/Trolley
- Commuter Train
- Inner Circle--- 5 min-walk
- Outer Circle--- 10 min-walk

### NAME OF THE HOUSING PROJECT IN THE NEIGHBORHOOD:

Peabody Terrace

### FACILITIES IN THE NEIGHBORHOOD:

- (1) Elementary School
- (2) Post Office
- (3) High School
- (4) Cambridge City Hall
- (5) Church
- (6) YMCA
- (7) Harvard University
- (8) Harvard Square
- (9) Public Library
- (10) Hospital
- (11) Cambridge Light & Electric
- (12) MBTA Yards
- (13) Fire Station
- (14) Central Square



## PEABODY TERRACE

Address: 900 Memorial Drive, Cambridge

Architect: Sert, Jackson & Associates Inc.

Owner: Harvard University

Date of Completion: Winter, 1964

### SITE CHARACTERISTICS:

Total Site Area.....5.9 acre  
 Total Building Coverage (incl. garage).....569,294 s.f.  
 Bldg. Coverage / Site Area.....23 %  
 People / Acre.....248  
 Dwelling Unit / Acre.....  
 Parking: Structure.....100,619 s.f.  
           On Grade.....11,250 s.f.  
 Parking / Dwelling Unit.....0.75/1  
 Open Space: For People.....117,612 s.f.  
               For Auto.....69,696 s.f.

### FACILITIES ON THE SITE:

(X)-- Nursery (three of them)  
 ( )-- Daycare Center  
 ( )-- Doctors/Dentists  
 (X)-- Grocery Store  
 (X)-- Playground  
 (X)-- Tennis Court  
 (X)-- Basketball Court  
 ( )-- Swimming Pool  
 (X)-- Community Hall

### BUILDING TYPES ON THE SITE:

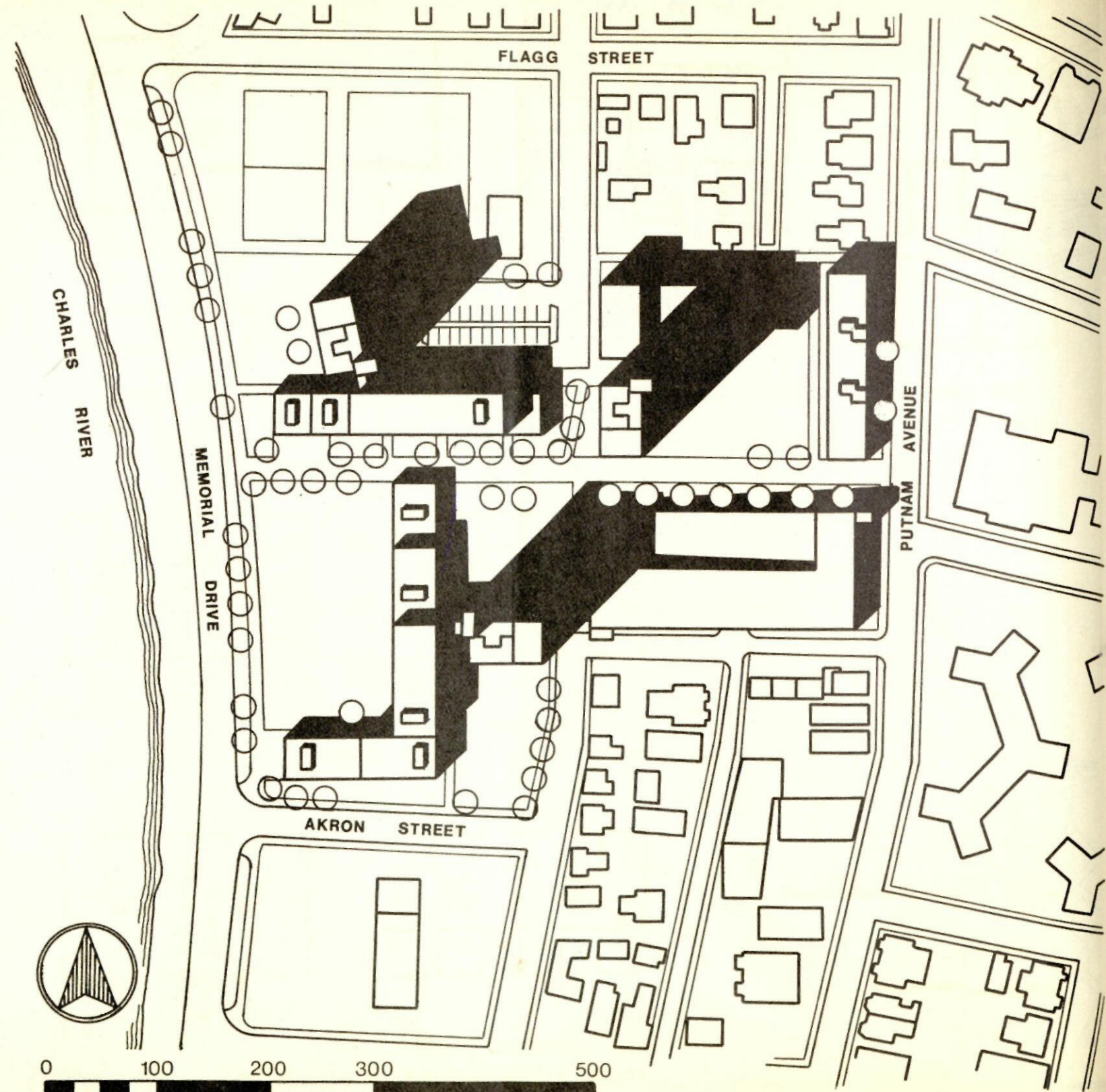
(A) Tower (22 stories)..... 3  
 (B) Slab (   stories)..... none  
 (C) Walkup (3-7 stories)..... 4  
 (D) Row..... none  
 (E) Other..... none

### PEOPLE: (Harvard Married Graduate Students)

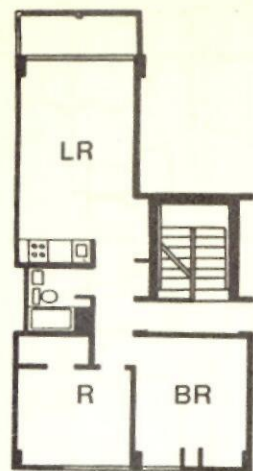
White..... %  
 Non-White..... %  
 Income Groups: Welfare % Low %  
                   Middle % High %

### ECONOMICS:

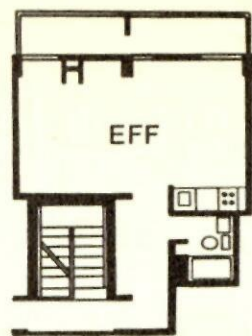
Total Project Cost..... \$ 9,000,000  
 Cost per sq.ft..... \$ 17.20/s.f.  
 Maintenance per year or month.. \$ 420,000/yr  
 Amortization Period..... none  
 Financing..... Private (Harvard)  
 Vacancy Rate..... 0 %  
 Turnover Rate..... 60%



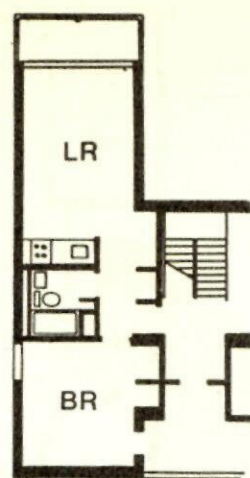




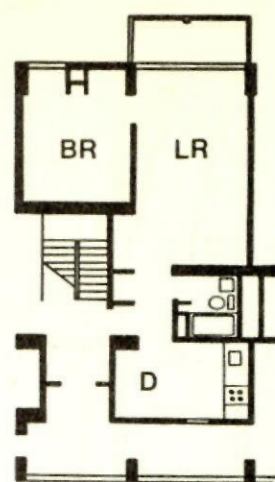
2 BR UNIT



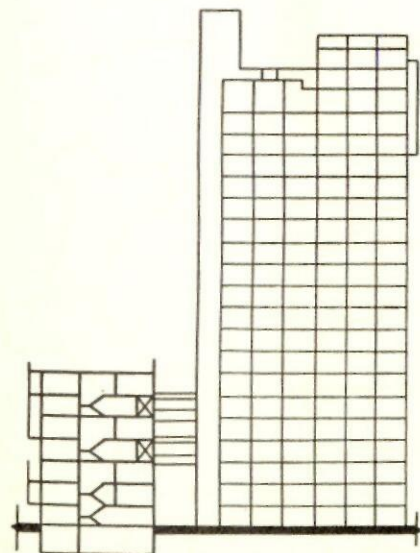
EFFICIENCY



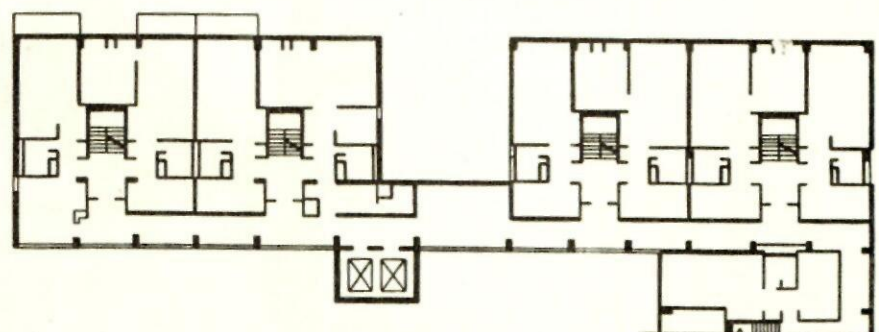
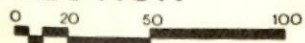
1 BR UNIT



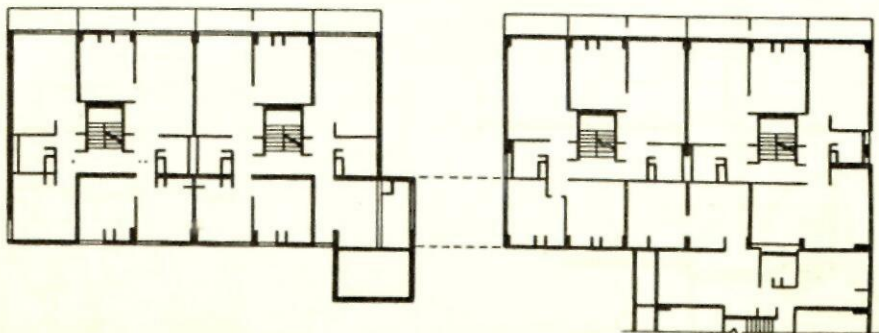
1 BR UNIT



SECTION



CORRIDOR FLOORS 4,6  
TOWER FLOOR 9,12,15,18 SIMILAR



NON-CORRIDOR FLOORS 2,3,5,7  
TOWER FLOOR 10,11,13,14,16,17,19,20 SIMILAR

## PEABODY TERRACE

Address: 900 Memorial Drive, Cambridge

Architect: Sert, Jackson & Associates, Inc.

Owner: Harvard University

Date of Completion: Winter, 1964

TYPE OF BUILDING: Tower & Walk-up

INCOME: Married Student Housing

### BUILDING CHARACTERISTICS:

Gross Building Area.....468,675 s.f.

Net Usable Area.....334,052 s.f.

Efficiency Index(Usable/Gross Bldg)..... 70 %

Types of Dwelling Unit in the Building:

Efficiency	72 units	3-BR	25 units
1-BR	200 units	4-BR	-- units
2-BR	200 units	5-BR	-- units

Structural: Reinforced Concrete with Precast Infill

Mechanical: Hot Water Heating

Services: Superintendents, Laundry

Building Regulations: Harvard Married Graduate Students only

### DWELLING UNIT CHARACTERISTICS:

Type of DU	Eff.	1-BRa	1-BRb	2-BR	4-BR	5-BR
BALCONY	24.0	24.0	46.0	46.0		
LR	271.0	188.0	252.0	252.0		
DR	(Comb w/LR)		85.0	103.0		
K	(Comb w/LR)		(Comb w/DR)			
BR 1	--	128.0	134.0	134.0		
BR 2	--	--	--	124.0		
BR 3	--	--	--	--		
BR 4	--	--	--	--		
BR 5	--	--	--	--		
Net Lvg	295.0	340.0	495.0	657.0		
BATH	33.0	33.0	33.0	33.0		
STORAGE	24.0	32.0	27.0	36.0		
OTHERS	179.0	130.0	128.0	141.0		
Gross Unit	486.0	482.0	667.0	867.0		
Net L/G.U.	60 %	71 %	77 %	76 %		
Rent/month	\$100- 115	\$120- 150	\$120- 150	\$140- 170		

Any extra rent for  
Parking.....none  
Recreational Facilities...none

REMARKS:



# PEABODY TERRACE

Address: 900 Memorial Drive, Cambridge

Architect: Sert, Jackson & Associates, Inc.

Owner: Harvard University

Date of Completion: Winter, 1964

TYPE OF BUILDING: Tower & Walk-up

INCOME: Married Student Housing

## BUILDING CHARACTERISTICS:

Gross Building Area.....468,675 s.f.

Net Usable Area.....334,052 s.f.

Efficiency Index(Usable/Gross Bldg)..... 70 %

Types of Dwelling Unit in the Building:

Efficiency 72 units 3-BR 25 units

1-BR 200 units 4-BR -- units

2-BR 200 units 5-BR -- units

Structural: Reinforced Concrete with Precast Infill

Mechanical: Hot Water Heating

Services: Superintendents, Laundry

Building Regulations: Harvard Married Graduate Students only

## DWELLING UNIT CHARACTERISTICS:

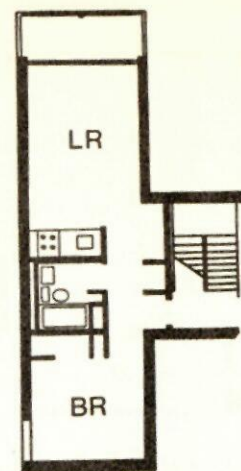
Type of DU	Eff.	1-BR	2-BR	3-BR	4-BR	5-BR
BALCONY		24.0	46.0	46.0		
LR		188.0	183.0	193.0		
DR		(Comb w/LR)		128.0		
K		(Comb w/LR)				
BR 1		114.0	130.0	124.0		
BR 2		--	106.0	130.0		
BR 3		--	--	136.0		
BR 4		--	--	--		
BR 5		--	--	--		
Net Lvg		326.0	439.0	752.0		
BATH		33.0	33.0	42.0		
STORAGE		34.0	43.0	40.0		
OTHERS		131.0	156.0	310.0		
Gross Unit		469.0	727.0	1062.0		
Net L/G.U.		70 %	62 %	69 %		
Rent/month		\$120-150	\$140-170	\$200		

Any extra rent for

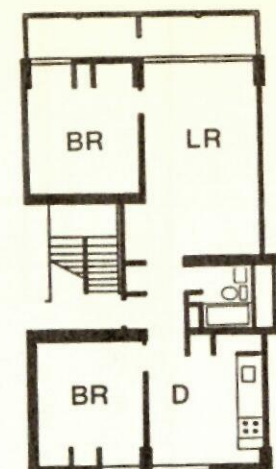
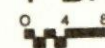
Parking.....none

Recreational Facilities...none

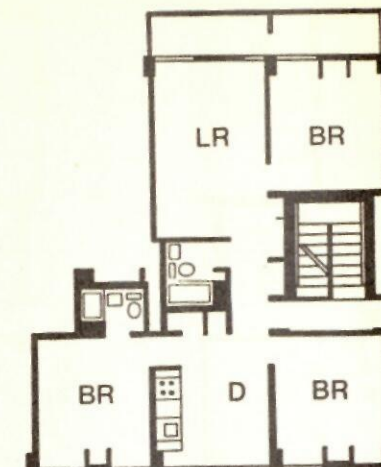
REMARKS:



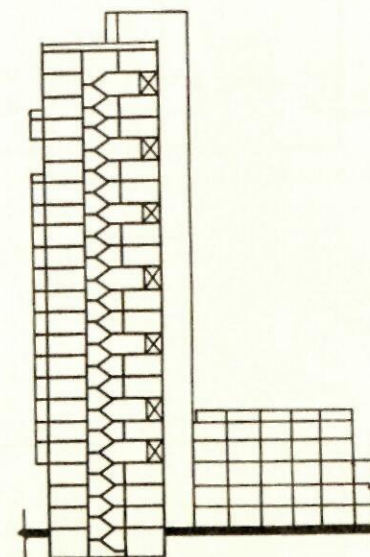
1 BR UNIT



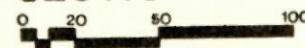
2 BR UNIT



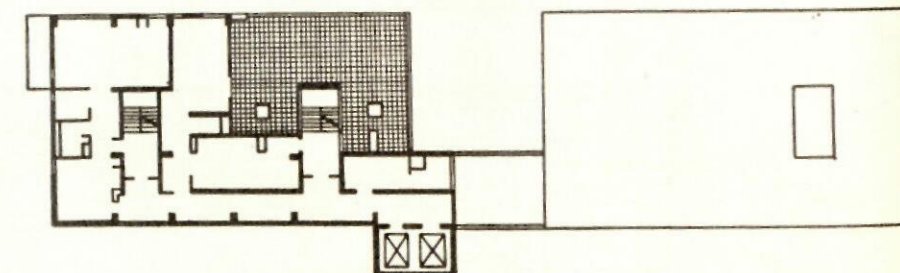
3 BR UNIT



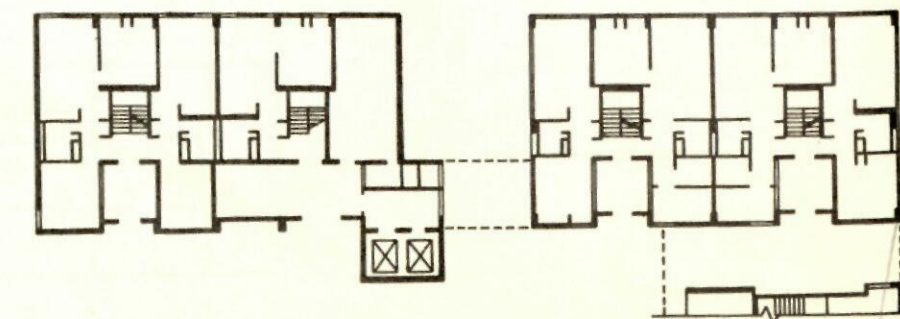
SECTION



FLOOR 21



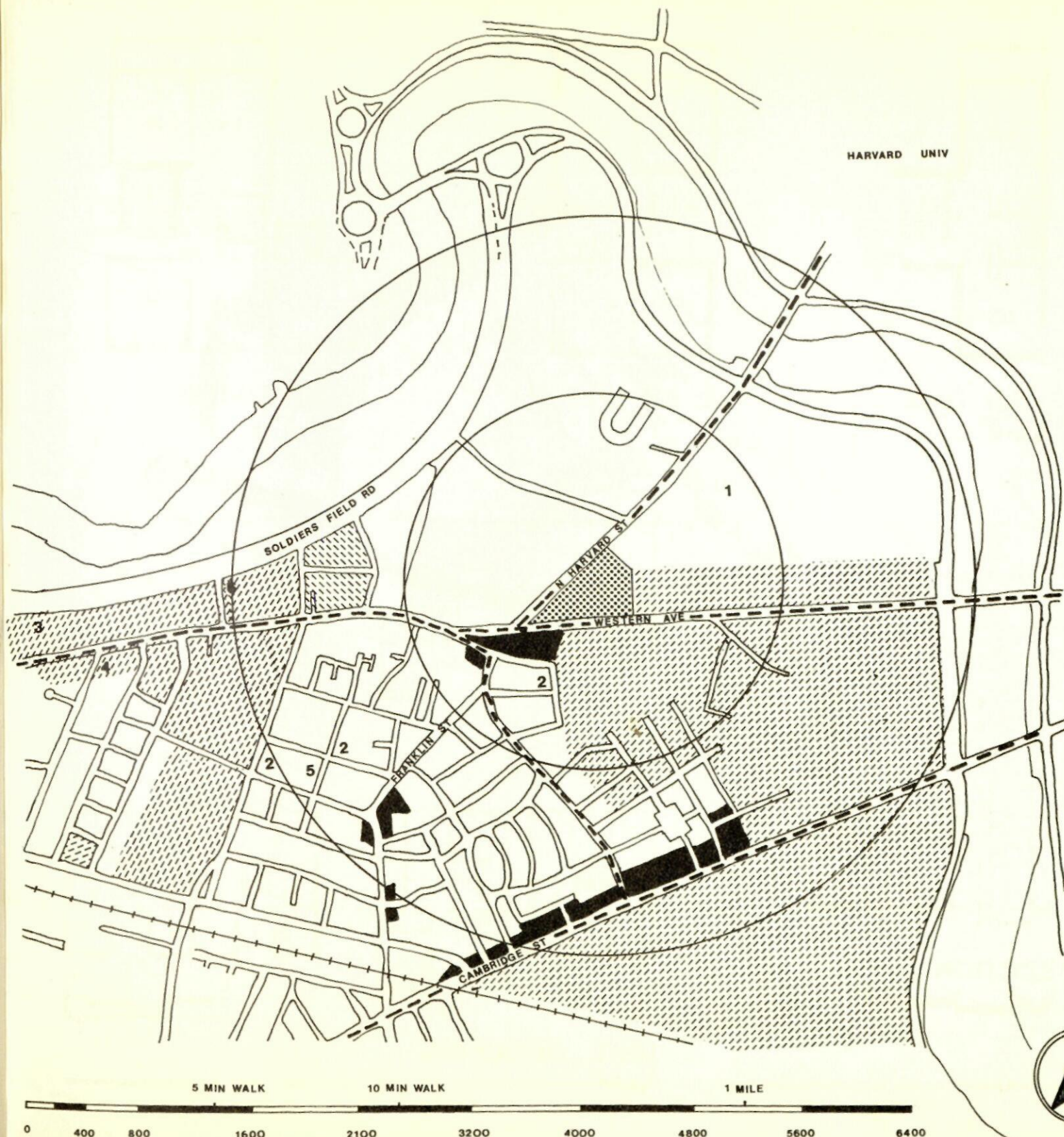
GROUND FLOOR



UNIT GROUPING







## ALLSTON, BRIGHTON

J

- The neighborhood of Allston in Brighton is composed of lower middle class, ethnically mixed families. It is predominantly a residential and light industrial area without any public park or open space.
- The North Harvard Street Housing Project is surrounded by the Harvard University Stadium on one side and a commercial strip on the other.

### LAND USE (within 10 min-walk vicinity)

- Commercial (Local retail & service stores)
- Business (Retail business & offices)
- Residential
- Housing Project Area
- Industrial
- Park/Open Space

- Subway
- Bus/Trolley

Inner Circle--- 5 min-walk  
Outer Circle--- 10 min-walk

### NAME OF THE HOUSING PROJECT IN THE NEIGHBORHOOD:

North Harvard

### FACILITIES IN THE NEIGHBORHOOD:

- (1) Harvard Business School and Harvard Stadium
- (2) Elementary School
- (3) Police
- (4) Fire Station
- (5) Church
- (6) Indoor Ice Skating Rink



# NORTH HARVARD

Address: North Harvard St & Western Ave.

Architect: PARD Team

Owner: Charlesview Incorporated

Date of Completion: Fall, 1971

## SITE CHARACTERISTICS:

Total Site Area.....5.7 acre  
Total Building Coverage.....78,700 s.f.  
Bldg. Coverage / Site Area.....33 %  
People / Acre.....167  
Dwelling Unit / Acre.....37.2  
Parking: Structure.....none  
On Grade.....48,200 s.f.  
Parking / Dwelling Unit.....1.3/1  
Open Space: For People.....172,000 s.f.  
For Auto.....48,200 s.f.

## FACILITIES ON THE SITE:

- ( ) -- Nursery
- ( ) -- Daycare Center
- (x) -- Doctors/Dentists
- ( ) -- Grocery Store
- ( ) -- Playground
- ( ) -- Tennis Court
- ( ) -- Basketball Court
- ( ) -- Swimming Pool
- ( ) -- Community Hall

## BUILDING TYPES ON THE SITE:

- (A) Tower ( stories)..... none
- (B) Slab ( stories)..... none
- (C) Walkup ( 4 stories)..... 44
- (D) Row ..... none
- (E) Other..... none

## PEOPLE:

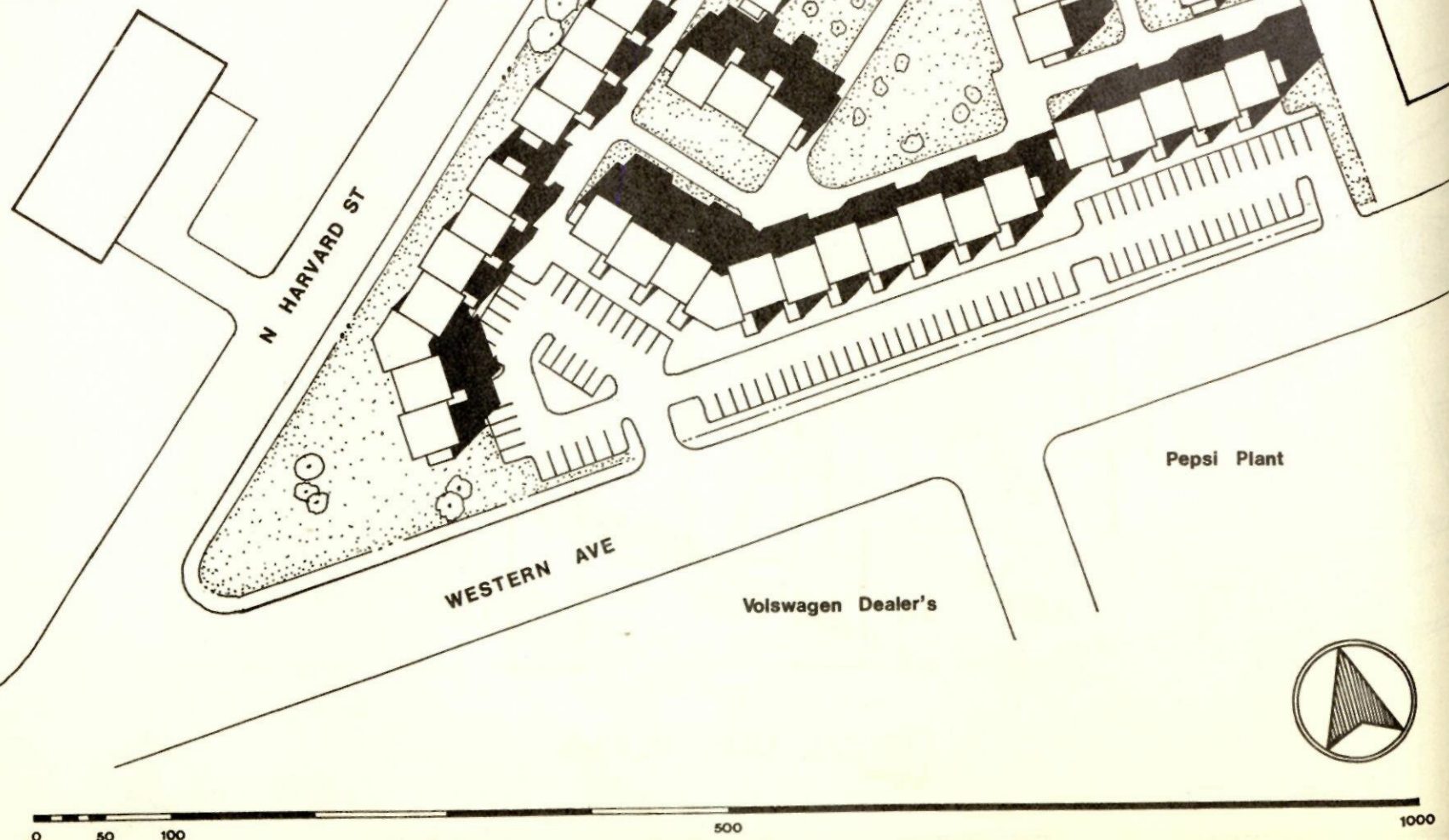
White..... n.a. %  
Non-White..... n.a. %  
Income Groups: Welfare \_\_\_\_\_ % Low \_\_\_\_\_ %  
Middle \_\_\_\_\_ % High \_\_\_\_\_ %

Low and Middle income groups; 20%  
of their rent is subsidized by govnt.

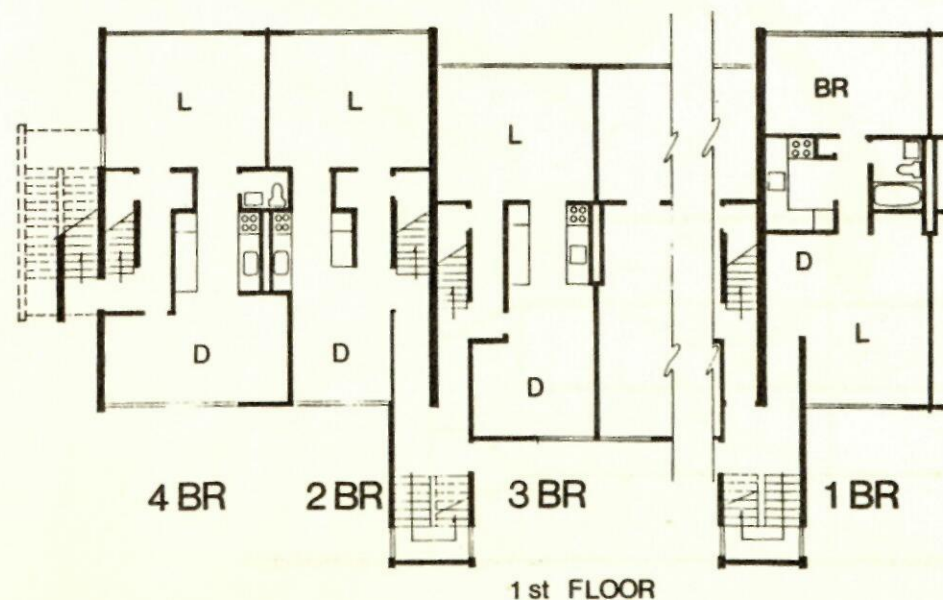
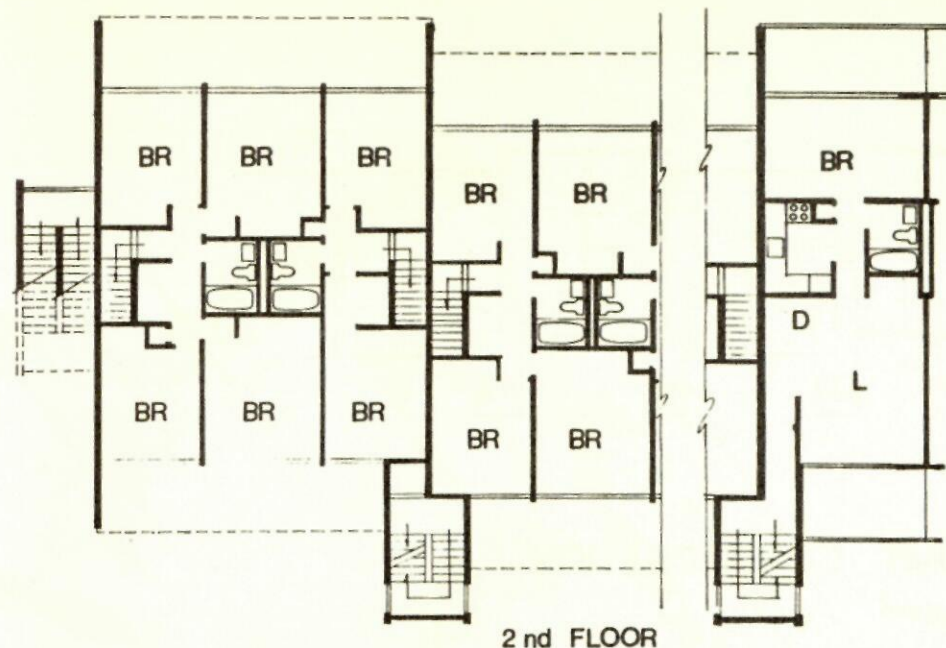
## ECONOMICS:

Total Project Cost..... \$ 5,000,000  
Cost per sq.ft..... not available  
Maintenance per year or month.. not established yet  
Amortization Period..... 40 years  
Financing..... FHA 221(d)(3)  
Vacancy Rate..... not available  
Turnover Rate..... not available

Harvard Building & Ground







TYPICAL UNIT PLANS



## NORTH HARVARD

Address: North Harvard St & Western Ave, Brighton

Architect: PARD Team

Owner: Charlesview Incorporated

Date of Completion: Fall, 1971

TYPE OF BUILDING: Walk-up

INCOME: Middle & Low

### BUILDING CHARACTERISTICS:

Gross Building Area.....148,000 s.f.

Net Usable Area.....133,000 s.f.

Efficiency Index(Usable/Gross Bldg)..... 90 %

Types of Dwelling Unit in the Building:

Efficiency -- units 3-BR 60 units

1-BR 72 units 4-BR 40 units

2-BR 40 units 5-BR -- units

Structural: Precast Concrete

Mechanical:

Services: Laundry

Building Regulations: none

### DWELLING UNIT CHARACTERISTICS:

Type of DU	Eff.	1-BR	2-BR	3-BR	4-BR	5-BR
BALCONY		56.0	56.0	56.0	56.0	
LR		152.0	163.0	163.0	168.0	
DR			100.0	120.0	144.0	
K		63.0	64.0	64.0	64.0	
BR 1		130.0	130.0	132.0	110.0	
BR 2		--	130.0	110.0	132.0	
BR 3		--	--	110.0	132.0	
BR 4		--	--	--	100.0	
BR 5		--	--	--	--	
Net Lvg		491.0	642.0	760.0	906.0	
BATH		35.0	35.0	35.0	50.0	
STORAGE		30.0	68.0	68.0	90.0	
OTHERS		30.0	100.0	130.0	100.0	
Gross Unit		496.0	851.0	993.0	1146.0	
Net L/G.U.		83 %	77 %	71 %	80 %	
Rent/month		\$125	\$150	\$177	\$195	

Any extra rent for

Parking..... none

Recreational Facilities... none

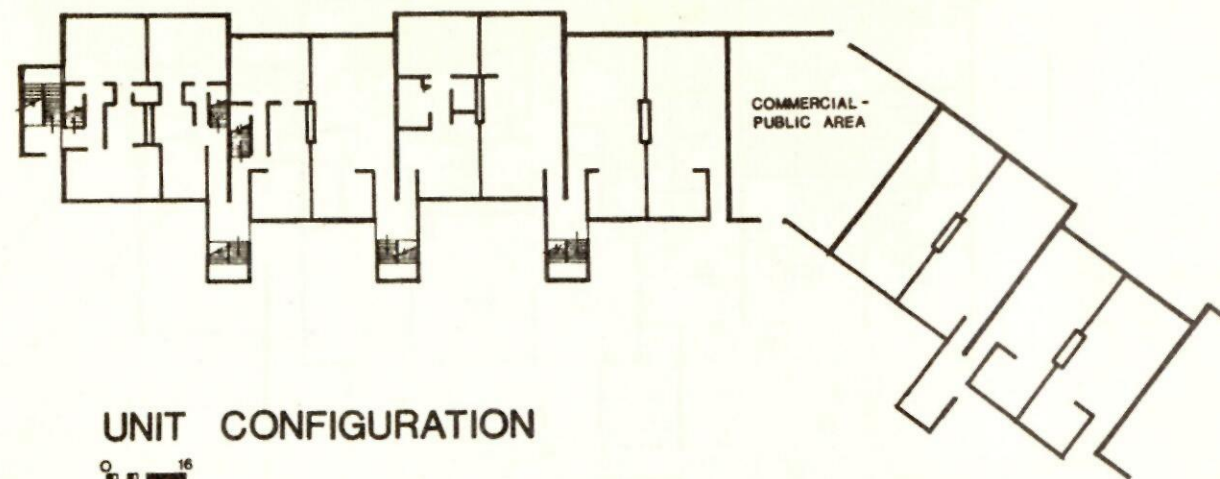
REMARKS:



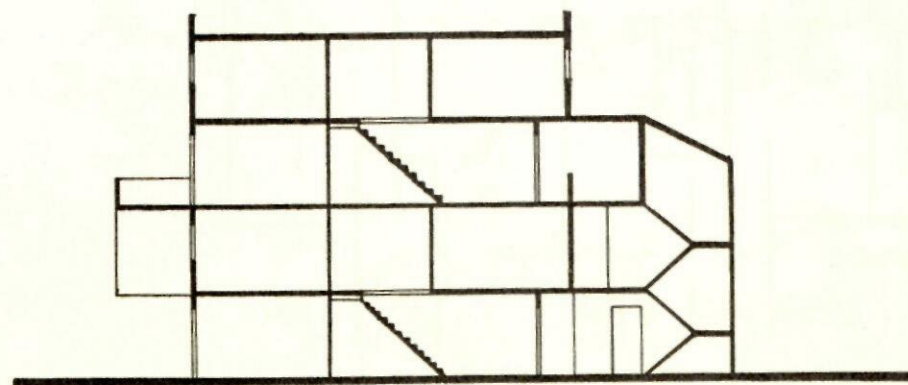
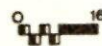
Continued from the previous page:

North Harvard Housing Project

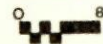
- Typical unit cluster configuration
- Typical unit section



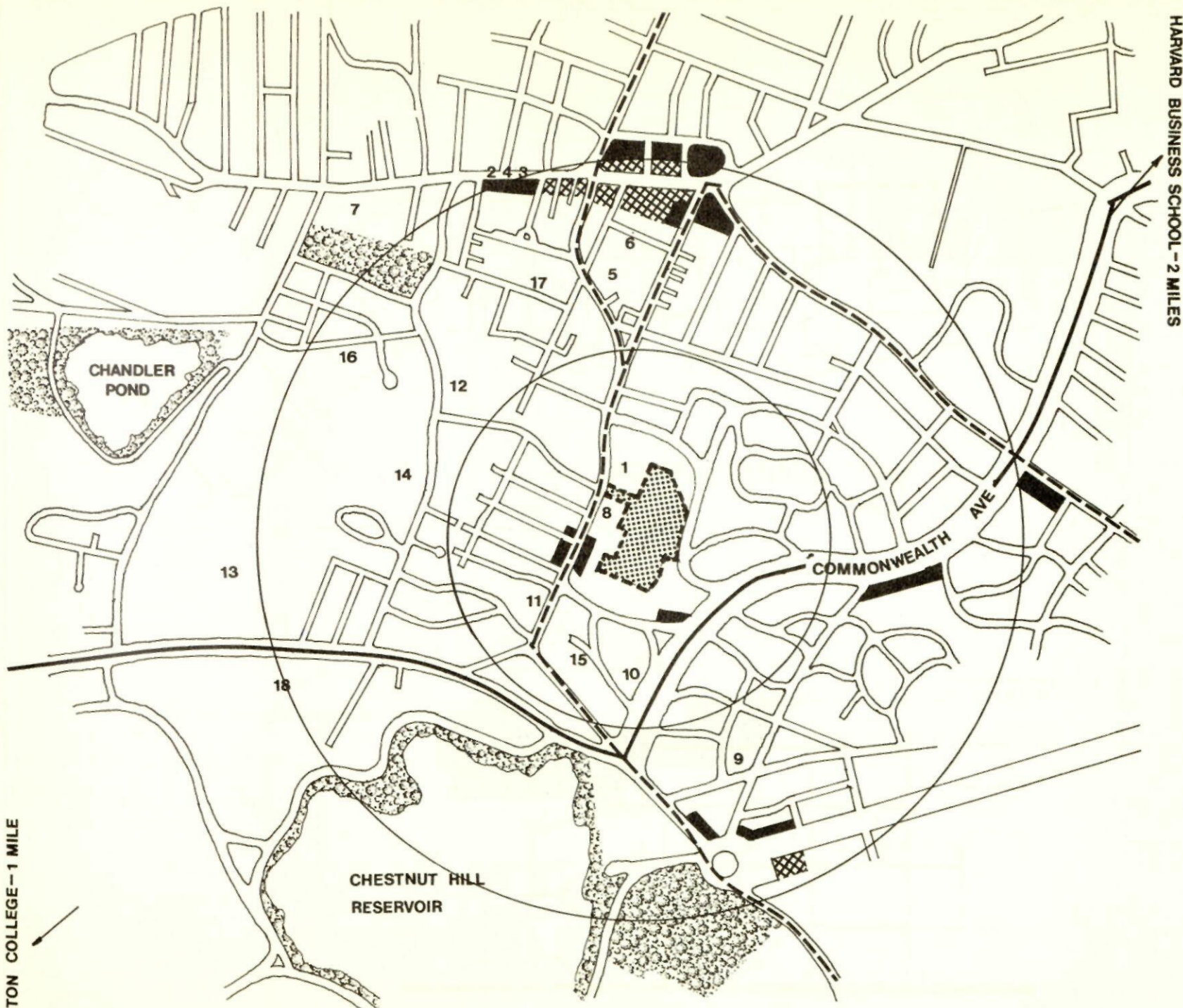
UNIT CONFIGURATION



SECTION







## ABERDEEN, BRIGHTON

K

- The Aberdeen neighborhood is a middle income, ethnically mixed (Jewish) residential area of single detached homes.
- The south side of the Ulin Housing Project (Jewish Community Housing for Elderly) is a large reservoir and in the north side of the Project, Aberdeen shopping area is located.

### LAND USE (within 10 min-walk vicinity.)

- Commercial (Local retail & service stores)
- Business (Retail business & offices)
- Residential
- Housing Project Area
- Industrial
- Park/Open Space
- Subway
- Bus/Trolley
- Commuter Train
- Inner Circle--- 5 min-walk
- Outer Circle--- 10 min-walk

### NAME OF THE HOUSING PROJECT IN THE NEIGHBORHOOD:

Ulin House (Jewish Community Housing for Elderly)

### FACILITIES IN THE NEIGHBORHOOD:

- ( 1) Fire Station
- ( 2) Post Office
- ( 3) Bank
- ( 4) Medical Building
- ( 5) Brighton Municipal Court
- ( 6) Brighton Library
- ( 7) YMCA
- ( 8) Filling Station
- ( 9) Jewish Community Center
- (10) Synagogue & School
- (11) Unitarian Parish Church
- (12) Convent
- (13) St. John Seminary
- (14) St. Clements Hall - School & Dormitory
- (15) Alexander Hamilton School
- (16) Thomas A. Edison Public School
- (17) Windship Primary School
- (18) Evergreen Cemetary



## ULIN HOUSE

Address: 30 Wallingford Road, Brighton

Architect: Samuel Glaser

Owner: Jewish Community Housing Incorporated

Date of Completion: Spring, 1971

### SITE CHARACTERISTICS:

Total Site Area.....3.74 acre  
Total Building Coverage..... 21,000 s.f.  
Bldg. Coverage / Site Area.....12.8 %  
People / Acre.....98  
Dwelling Unit / Acre.....65  
Parking: Structure.....none  
On Grade.....9,600 s.f.  
Parking / Dwelling Unit.....0.2/1  
Open Space: For People..... 131,780 s.f.  
For Auto..... 10,800 s.f.

### FACILITIES ON THE SITE:

- ( )-- Nursery
- ( )-- Daycare Center
- ( )-- Doctors/Dentists
- ( )-- Grocery Store
- ( )-- Playground
- ( )-- Tennis Court
- ( )-- Basketball Court
- ( )-- Swimming Pool
- (X)-- Community Hall

### BUILDING TYPES ON THE SITE:

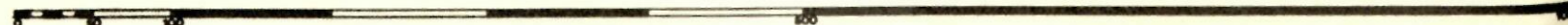
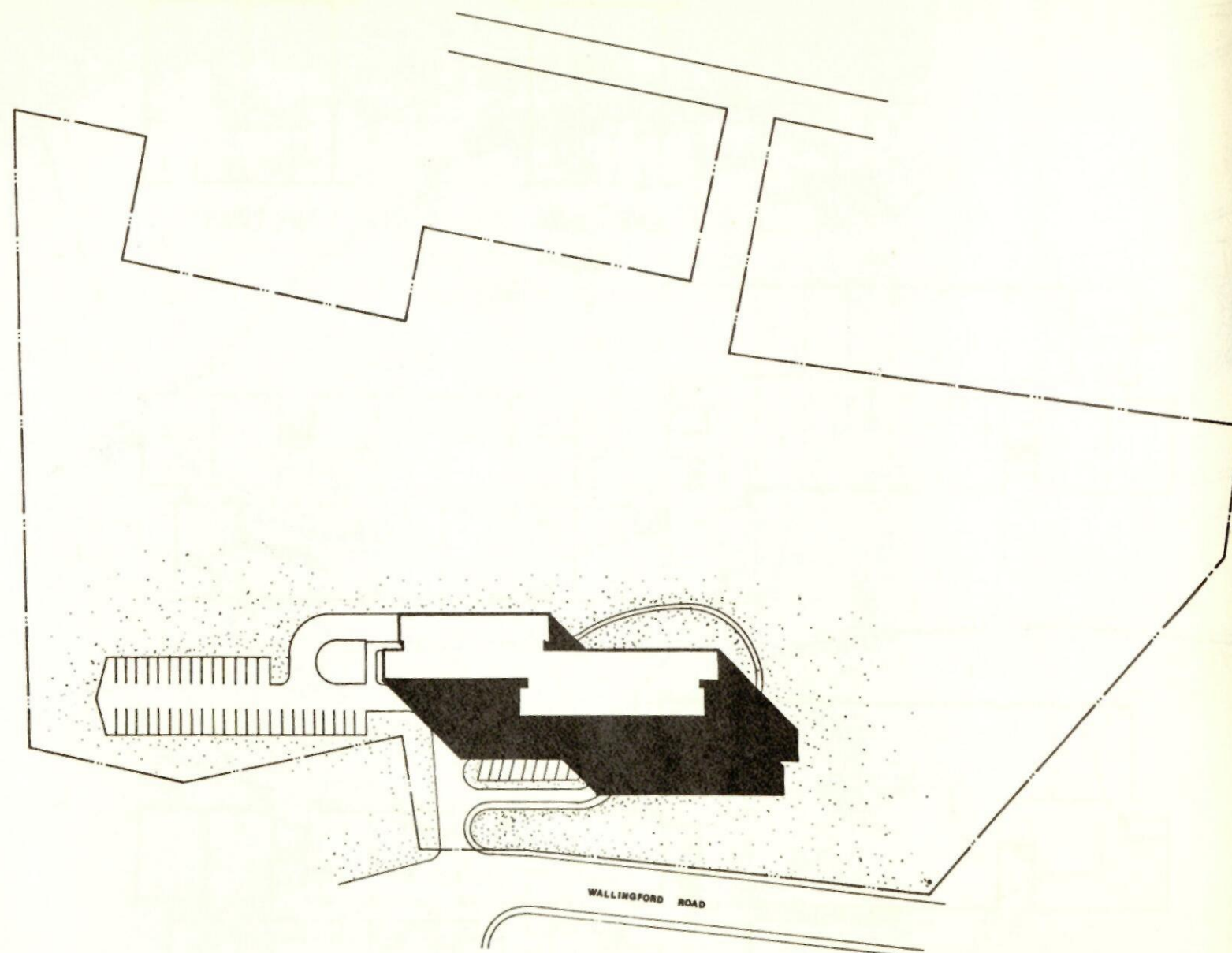
- (A) Tower ( stories)..... none
- (B) Slab (10 stories)..... 1
- (C) Walkup ( stories)..... none
- (D) Row..... none
- (E) Other..... none

### PEOPLE:

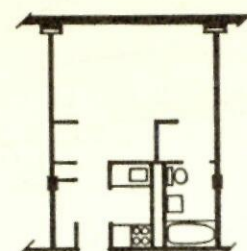
White..... 98 %  
Non-White..... 2 %  
Income Groups: Welfare -- % Low 100 %  
Middle -- % High -- %

### ECONOMICS:

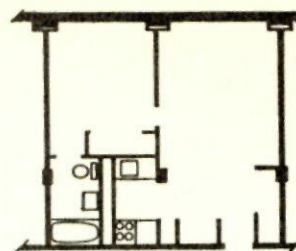
Total Project Cost..... \$ 3,803,000  
Cost per sq.ft..... not available  
Maintenance per year or month.. not available  
Amortization Period..... 30 years  
Financing..... not available  
Vacancy Rate..... not established yet  
Turnover Rate..... not available



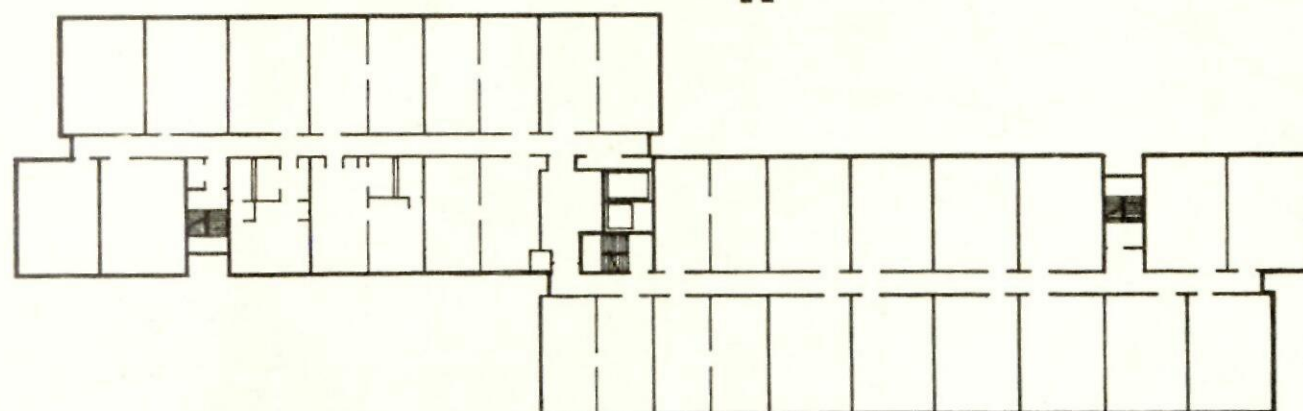




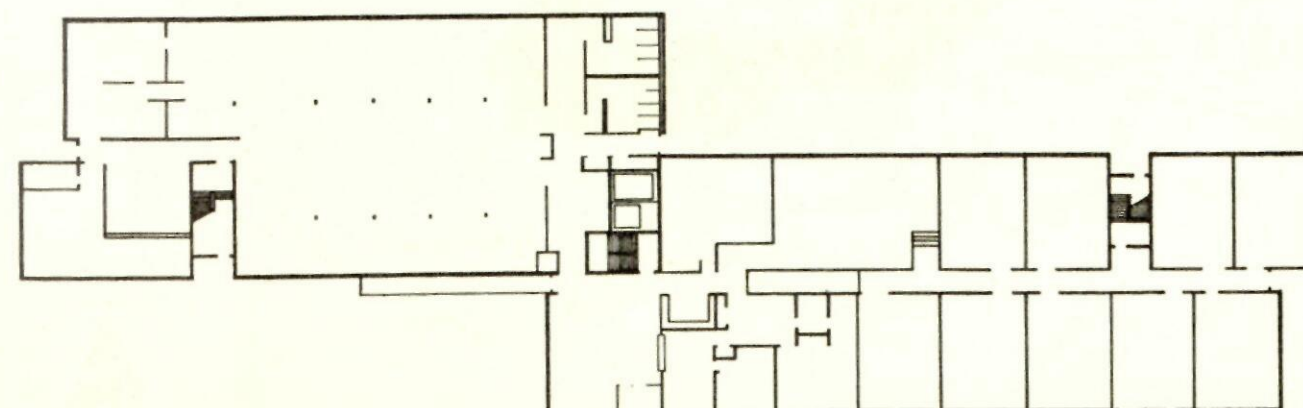
EFF UNIT



1 BR UNIT



TYP FLOOR



1st FLOOR  
UNIT BLOCK

## ULIN HOUSE

Address: 30 Wallingford Road, Brighton

Architect: Samuel Glaser

Owner: Jewish Community Housing Incorporated

Date of Completion: Spring, 1971

TYPE OF BUILDING: Slab

INCOME: Low

### BUILDING CHARACTERISTICS:

Gross Building Area..... 210,000 s.f.

Net Usable Area.....

Efficiency Index(Usable/Gross Bldg).....

Types of Dwelling Unit in the Building:

Efficiency 72 units 3-BR -- units

1-BR 171 units 4-BR -- units

2-BR -- units 5-BR -- units

Structural: Steel & Brick

Mechanical: Hot Water Heating, Window Unit A.C.

Services: Floor Captains, House Director

Building Regulations: none

### DWELLING UNIT CHARACTERISTICS:

Type of DU	Eff.	1-BR	2-BR	3-BR	4-BR	5-BR
BALCONY	--	--				
LR	153.0	220.0				
DR	22.5					
K	32.0	32.0				
BR 1	--	120.0				
BR 2	--	--				
BR 3	--	--				
BR 4	--	--				
BR 5	--	--				
Net Lvg	209.5	372.0				
BATH	41.0	41.0				
STORAGE	41.5	50.0				
OTHERS	--	--				
Gross Unit	377.5	540.0				
Net L/G.U.	55 %	70 %				
Rent/month	\$ 96	\$ 132				

Any extra rent for

Parking.....\$ 5/month

Recreational Facilities...none










REMARKS:



## LOWELL, MASS.

- The Housing Project of Northern Canal is located in the downtown area of Lowell. The neighborhood of the Northern Canal is multifamily residential area developed in the 1960's.
- The neighborhood is composed of low and moderate income, ethnically mixed families.

### LAND USE (within 10 min-walk vicinity)

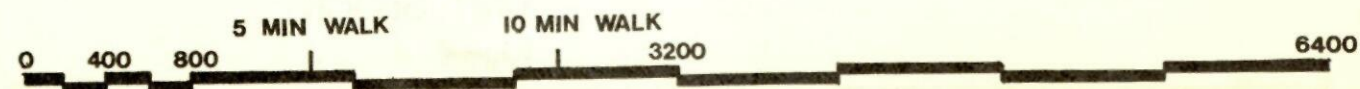
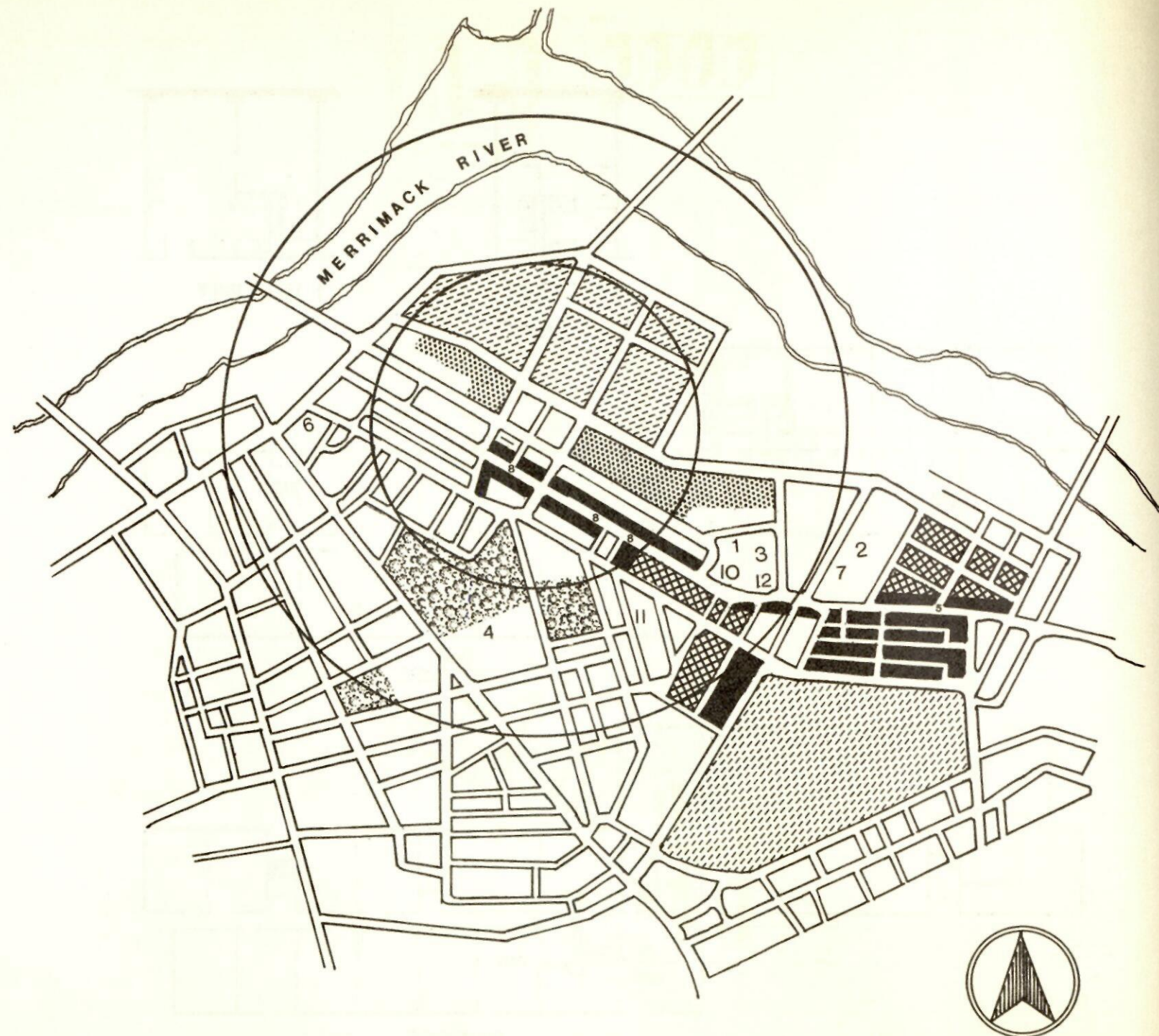
-  Commercial (Local retail & service stores)
-  Business (Retail business & offices)
-  Residential
-  Housing Project Area
-  Industrial
-  Park/Open Space
-  Subway
-  Bus/Trolley
-  Commuter Train
- Inner Circle----- 5 min-walk
- Outer Circle----- 10 min-walk

### NAME OF THE HOUSING PROJECT IN THE NEIGHBORHOOD:

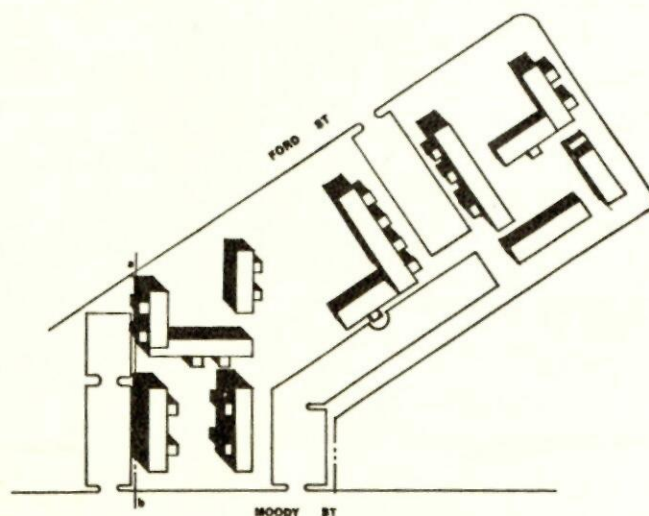
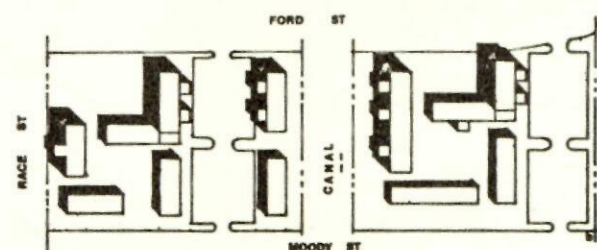
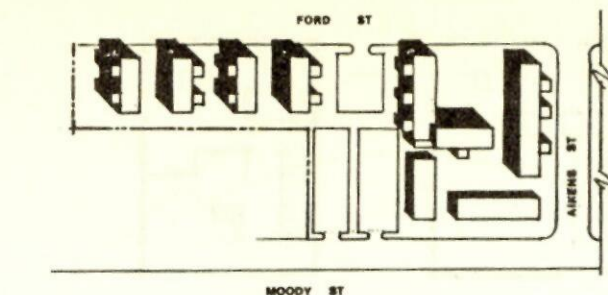
Northern Canal

### FACILITIES IN THE NEIGHBORHOOD:

- (1) Elementary School
- (2) High School
- (3) Library
- (4) Park
- (5) Movie Theater
- (6) Hospital
- (7) Church
- (8) Public Transit
- (9) Shopping Center
- (10) Police/Fire Station
- (11) Convenience Store
- (12) City Hall







## NORTHERN CANAL

Address: 207 Moody St, Lowell, Mass.

Architect: Don Stull

Owner: Development Corporation of America

Date of Completion: Winter, 1970

### SITE CHARACTERISTICS:

Total Site Area.....	8.5 acre
Total Building Coverage.....	61,250 s.f.
Bldg. Coverage / Site Area.....	16.5 %
People / Acre.....	22
Dwelling Unit / Acre.....	31
Parking: Structure.....	none
On Grade.....	53,400 s.f.
Parking / Dwelling Unit.....	1/1
Open Space: For People.....	257,389 s.f.
For Auto.....	53,400 s.f.

### FACILITIES ON THE SITE:

( ) -- Nursery	
( ) -- Daycare Center	
( ) -- Doctors/Dentists	
( ) -- Grocery Store	None of these is
( ) -- Playground	available.
( ) -- Tennis Court	
( ) -- Basketball Court	
( ) -- Swimming Pool	
( ) -- Community Hall	

### BUILDING TYPES ON THE SITE:

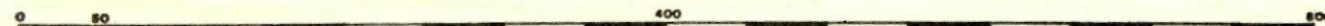
(A) Tower ( stories)....	none
(B) Slab ( stories)....	none
(C) Walkup ( 3 stories)....	33
(D) Row.....	none
(E) Other.....	none

### PEOPLE:

White.....	50 %
Non-White.....	50 %
Income Groups: Welfare --	Low 50 %
Middle 50 %	High --

### ECONOMICS:

Total Project Cost.....	\$ 4,596,477
Cost per sq.ft.....	\$ 20.50/s.f.
Maintenance per year or month..	\$ 42,000/yr.
Amortization Period.....	40 yrs
Financing.....	FHA 221(d)(3)
Vacancy Rate.....	0 %
Turnover Rate.....	0.02% or 5 Apts/month





# NORTHERN CANAL

Address: 207 Moody Street, Lowell, Mass.

Architect: Don Stull

Owner: Development Corporation of America

Date of Completion: Winter, 1970

TYPE OF BUILDING: Walk-up

INCOME: Middle & Low

## BUILDING CHARACTERISTICS:

Gross Building Area.....223,339 s.f.

Net Usable Area.....204,718 s.f.

Efficiency Index(Usable/Gross Bldg)..... 93.9 %

Types of Dwelling Unit in the Building:

Efficiency -- units 3-BR 51 units

1-BR 48 units 4-BR -- units

2-BR 168 units 5-BR -- units

Structural: Precast Concrete

Mechanical: Gas-fired Hot Water Heating

Services: Laundry

Building Regulations: none

## DWELLING UNIT CHARACTERISTICS:

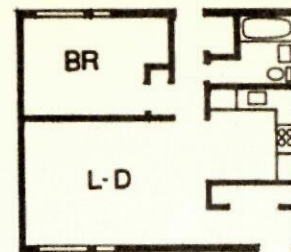
Type of DU	Eff.	1-BR	2-BR	3-BR	4-BR	5-BR
BALCONY		--	--	--		
LR		225.0	162.0	181.0		
DR		76.0	70.0	84.0		
K		76.0	81.0	84.0		
BR 1		120.0	130.0	137.0		
BR 2		--	95.0	100.0		
BR 3		--	--	96.0		
BR 4		--	--	--		
BR 5		--	--	--		
Net Lvg		421.0	538.0	682.0		
BATH		46.0	40.0	46.0		
STORAGE		43.0	70.0	39.0		
OTHERS		57.0	47.0	69.0		
Gross Unit		567.0	698.0	836.0		
Net L/G.U.		77 %	77 %	82 %		
Rent/month		\$ 109	\$ 121	\$ 137		

Any extra rent for

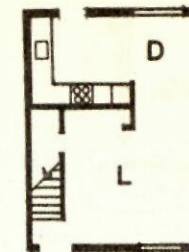
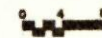
Parking.....none

Recreational Facilities...none

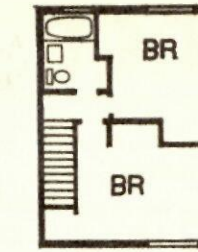
REMARKS:



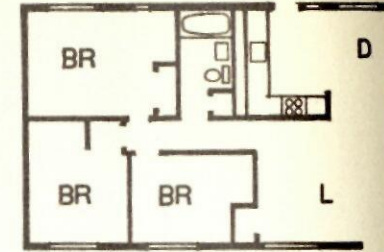
1 BR UNIT



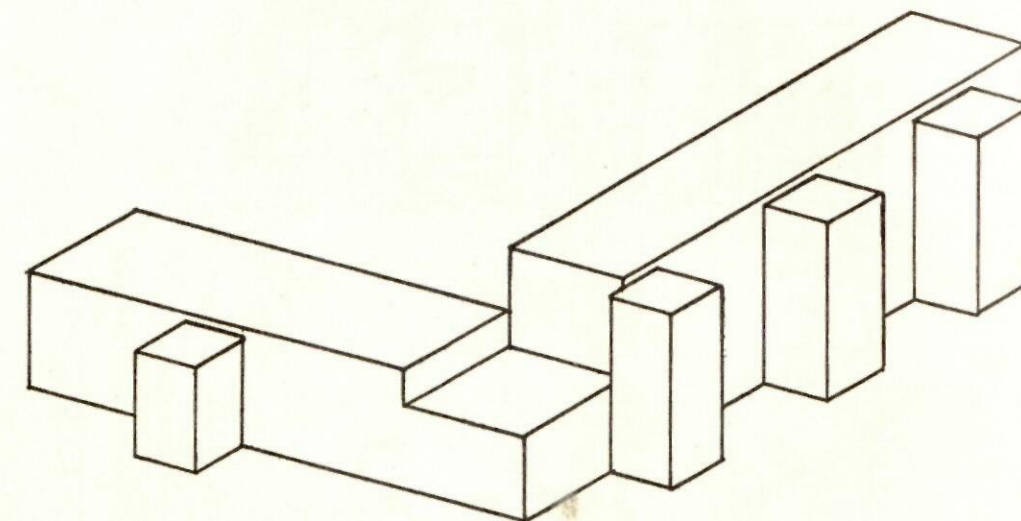
1 st FL



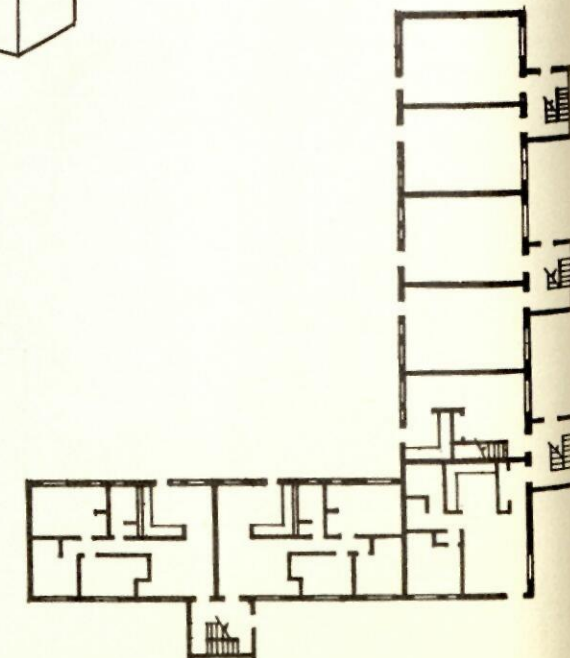
2nd FL



3 BR UNIT



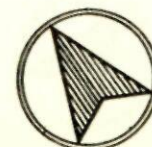
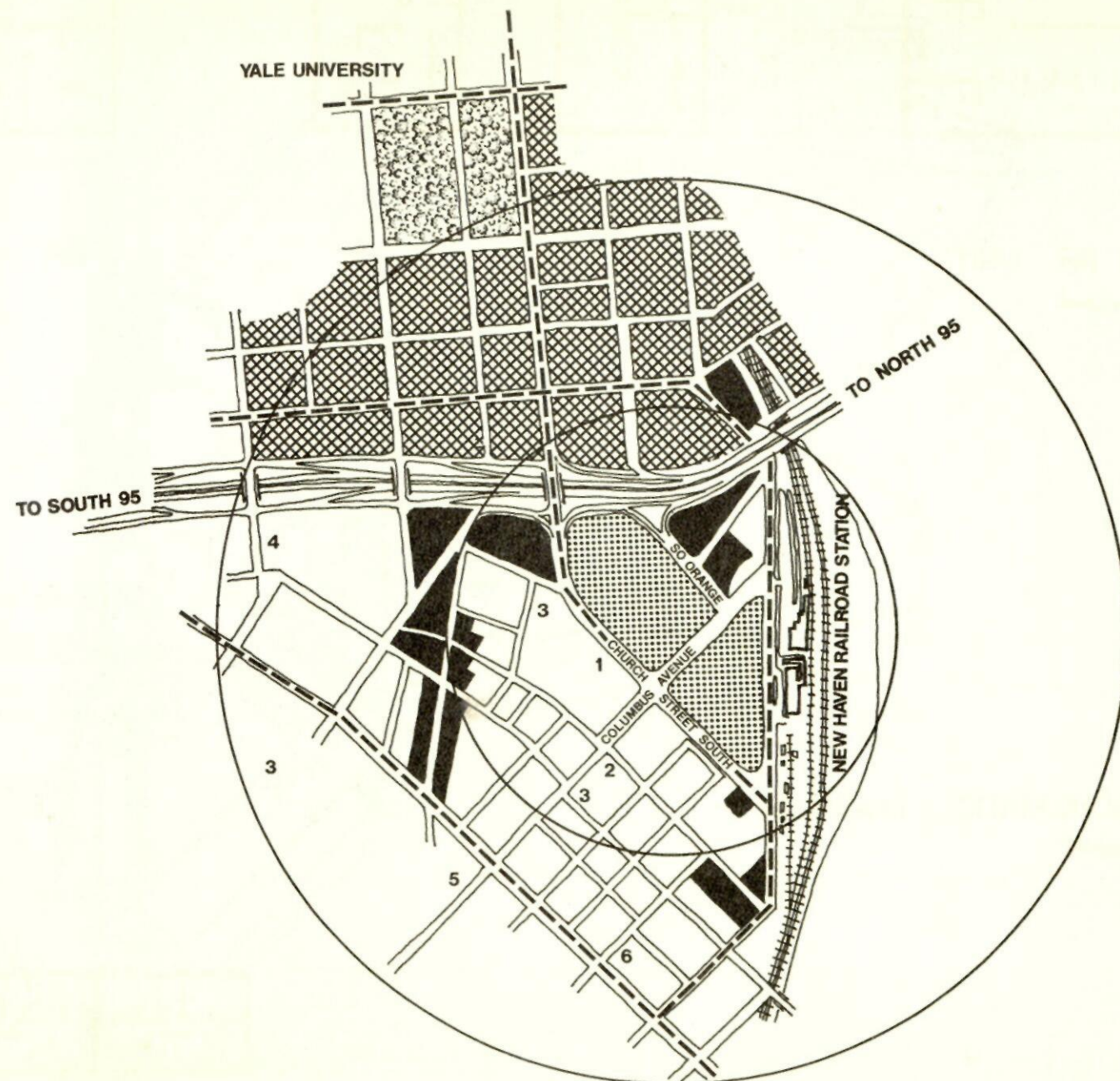
SCHEMATIC DIAGRAM



TYP. UNIT BLOCK







## NEW HAVEN, CONN.

- The Church Street South District is essentially a low to middle income, ethnically mixed residential district. It has been undergoing considerable re-development over the past 7 years.
- It is bordered on the north by the Conn. Turnpike which acts as a buffer to Downtown New Haven; to the south is the New Haven Railroad Station. The Church Street South District consequently is New Haven's "welcome mat" to the visitors travelling by rail

### LAND USE (within 10 min-walk vicinity)

- Commercial (Local retail & service stores)
- Business (Retail business & offices)
- Residential
- Housing Project Area
- Industrial
- Park/Open Space
- Subway
- Bus/Trolley
- Commuter Train
- Inner Circle---- 5 min-walk
- Outer Circle---- 10 min-walk

### NAME OF THE HOUSING PROJECT IN THE DISTRICT:

Church Street South

### FACILITIES IN THE DISTRICT:

- (1) High School
- (2) Church
- (3) Elementary School
- (4) New Haven Medical Center
- (5) Library
- (6) Fire Station

0 200 400 800 1600 2400 3200 4000 4800 5600 6400

5 MIN WALK 10 MIN WALK 1 MILE



# CHURCH STREET SOUTH

Address: Church St. South & Union Ave. New Haven

Architect: Charles W. Moore

Owner: New Haven Jaycees

Date of Completion: Spring, 1970

## SITE CHARACTERISTICS:

Total Site Area.....	8.3 acre
Total Building Coverage.....	115,635 s.f.
Bldg. Coverage / Site Area.....	32 %
People / Acre.....	215
Dwelling Unit / Acre.....	36.3
Parking: Structure.....	none
On Grade.....	65,000 s.f.
Parking / Dwelling Unit.....	1/1
Open Space: For People.....	180,377 s.f.
For Auto.....	65,000 s.f.

## FACILITIES ON THE SITE:

- (X)-- Nursery
- (X)-- Daycare Center
- (X)-- Doctors/Dentists
- (X)-- Grocery Store
- (X)-- Playground
- ( )-- Tennis Court
- ( )-- Basketball Court
- ( )-- Swimming Pool
- ( )-- Community Hall

## BUILDING TYPES ON THE SITE:

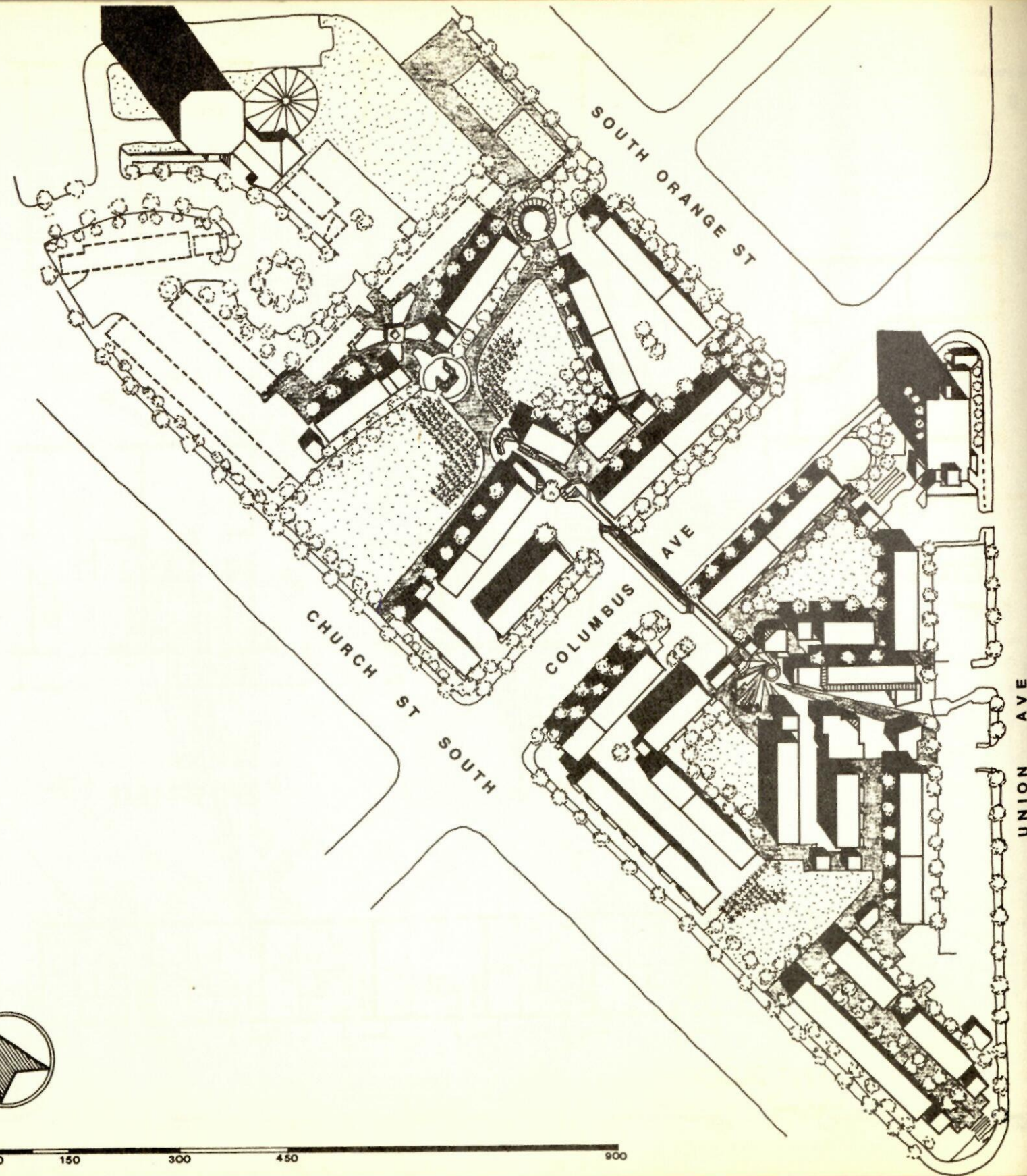
- (A) Tower ( stories) ..... none
- (B) Slab ( stories) ..... none
- (C) Walkup (3-4 stories) ..... 23
- (D) Row ..... none
- (E) Other ..... none

## PEOPLE:

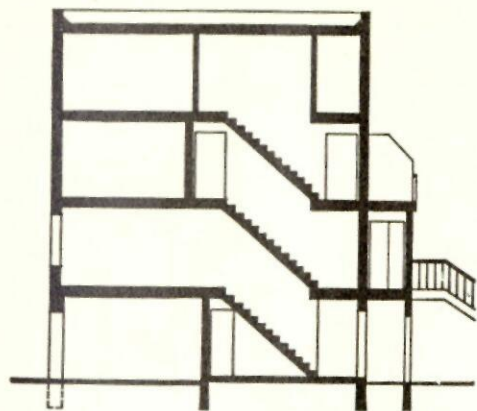
White.....	5 %
Non-White.....	95 %
Income Groups: Welfare 32 %	Low 68 %
Middle %	High %

## ECONOMICS:

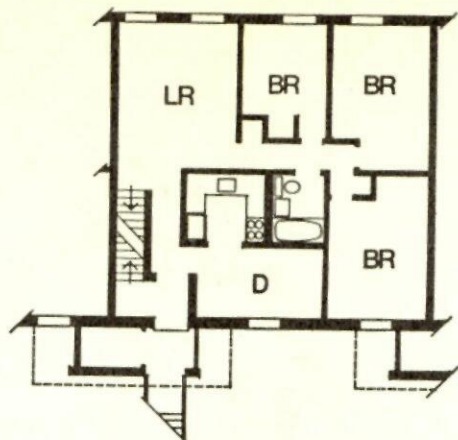
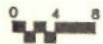
Total Project Cost.....	\$ 6,550,532
Cost per sq.ft.....	\$ 19.17/sq.ft.
Maintenance per year or month..	\$ 165,145/year
Amortization Period.....	40 years
Financing.....	FHA 221 (d)(3)
Vacancy Rate.....	0
Turnover Rate.....	0



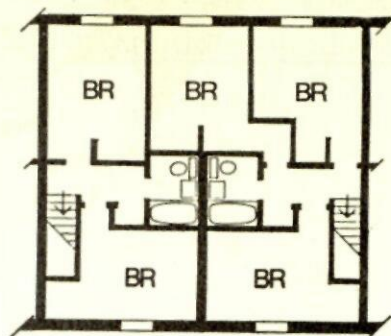




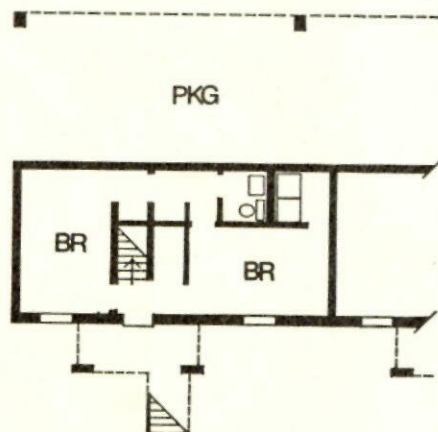
SECTION



2nd FLOOR

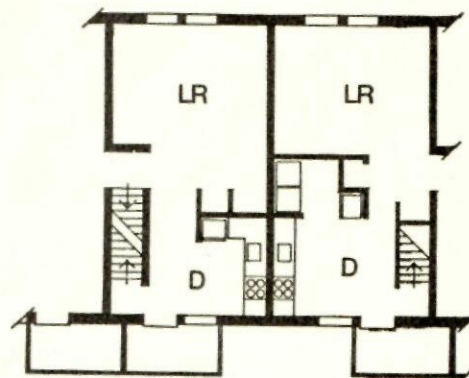


4th FLOOR



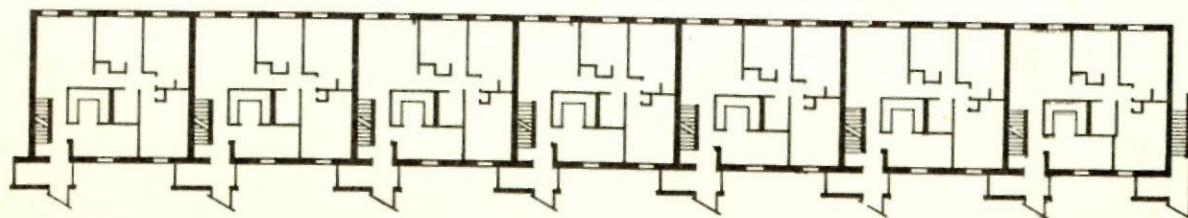
1st FLOOR

5 BR UNIT

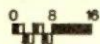


3rd FLOOR

2-3 BR UNIT



UNIT BLOCK



## CHURCH STREET SOUTH

Address: Church St. South & Union Ave. New Haven

Architect: Charles W. Moore

Owner: New Haven Jaycees

Date of Completion: Spring, 1970

TYPE OF BUILDING: Walk-up

INCOME: Low

### BUILDING CHARACTERISTICS:

Gross Building Area..... 325,234 s.f.

Net Usable Area..... 297,690 s.f.

Efficiency Index(Usable/Gross Bldg)..... 92 %

Types of Dwelling Unit in the Building:

Efficiency -- units 3-BR 151 units

1-BR 5 units 4-BR 9 units

2-BR 102 units 5-BR 34 units

Structural: Block

Mechanical: Forced Hot Water Heating

Services: Laundry

Building Regulations: none

### DWELLING UNIT CHARACTERISTICS:

Type of DU	Eff.	1-BR	2-BR	3-BR	4-BR	5-BR
BALCONY		--	25.0	22.0	--	--
LR		290.0	288.0	291.0	196.0	196.0
DR		75.0	70.0	89.0	160.0	160.0
K			(Combined with DR)			
BR 1		122.0	121.0	123.0	87.0	87.0
BR 2		--	120.0	120.0	120.0	120.0
BR 3		--	--	120.0	120.0	120.0
BR 4		--	--	--	122.0	128.0
BR 5		--	--	--	--	122.0
Net Lvg		487.0	624.0	765.0	805.0	933.0
BATH		40.0	37.0	37.0	80.0	80.0
STORAGE		35.0	65.0	60.0	75.0	60.0
OTHERS		93.0	124.0	48.0	280.0	312.0
Gross Unit		655.0	850.0	910.0	1240.0	1385.0
Net L/G.U.		74 %	73 %	84 %	64 %	68 %
Rent/month		\$ 100	\$ 120	\$ 140	\$ 156	\$ 165

Any extra rent for

Parking.....none

Recreational Facilities...none




### REMARKS:



## MARSEILLES, FRANCE

- The Unite d'Habitation is located approximately 3 miles south from the Downtown Marseilles (The Old Harbor area) on the major city artery, Boulevard Michelet, running north-south.
- The neighborhood of the Unite is composed of primarily residential units - high rise apartments as well as single family houses.
- About one mile west of the Unite is the Mediterranean waterfront with a wonderful promenade and a large public park with a museum.
- The east side of Unite is an open area with a few single family houses, and it is in this area where Le Corbusier proposed to build three more Unites & two circular tower units with education, cultural, commercial, and business facilities on the ground.

### LAND USE (within 10 min-walk vicinity)

-  Park/Open Space
-  Housing Project Area
-  Bus

### NAME OF THE HOUSING PROJECT IN THE NEIGHBORHOOD:

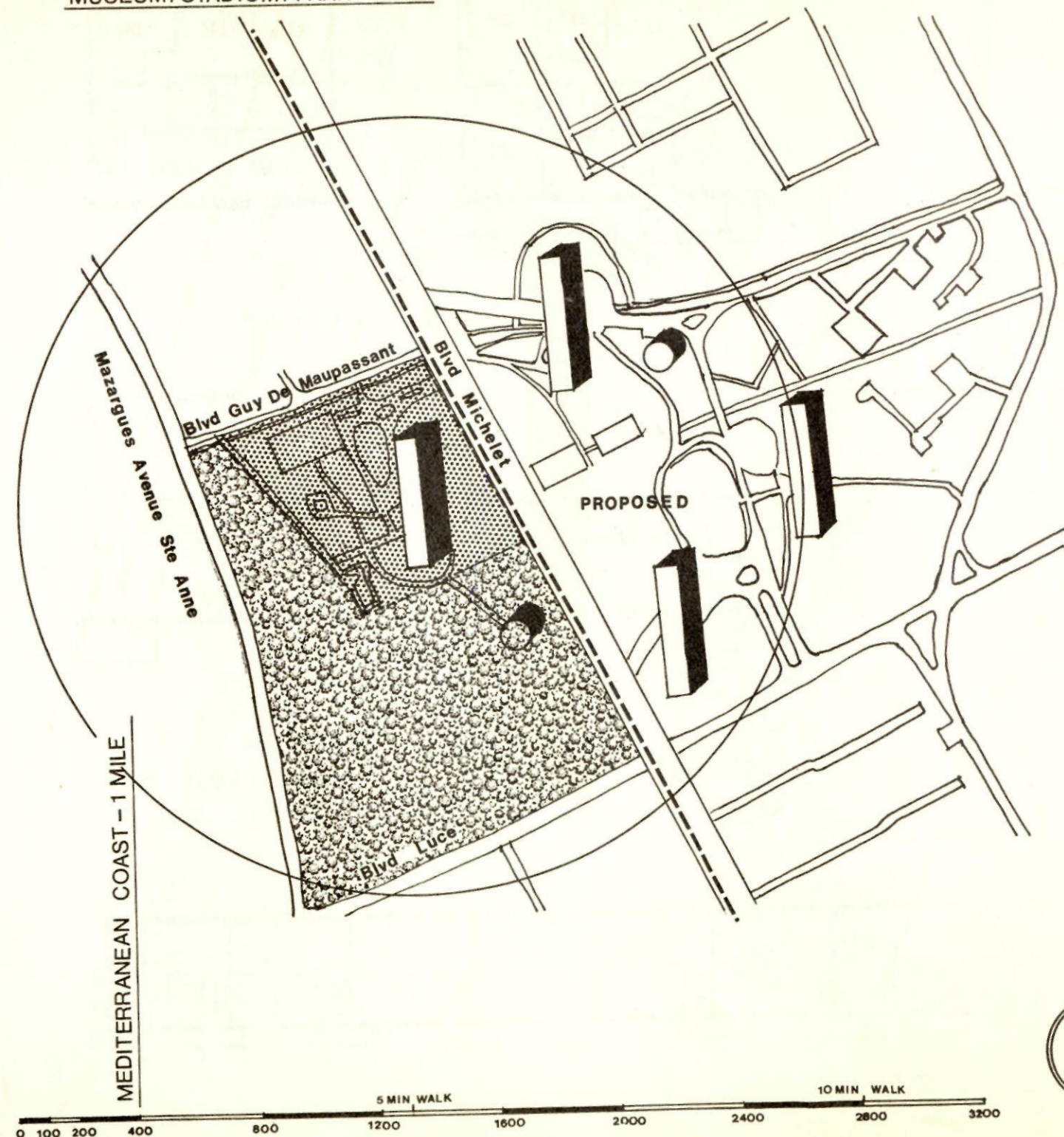
Unite d'Habitation of Marseilles

### FACILITIES IN THE NEIGHBORHOOD:

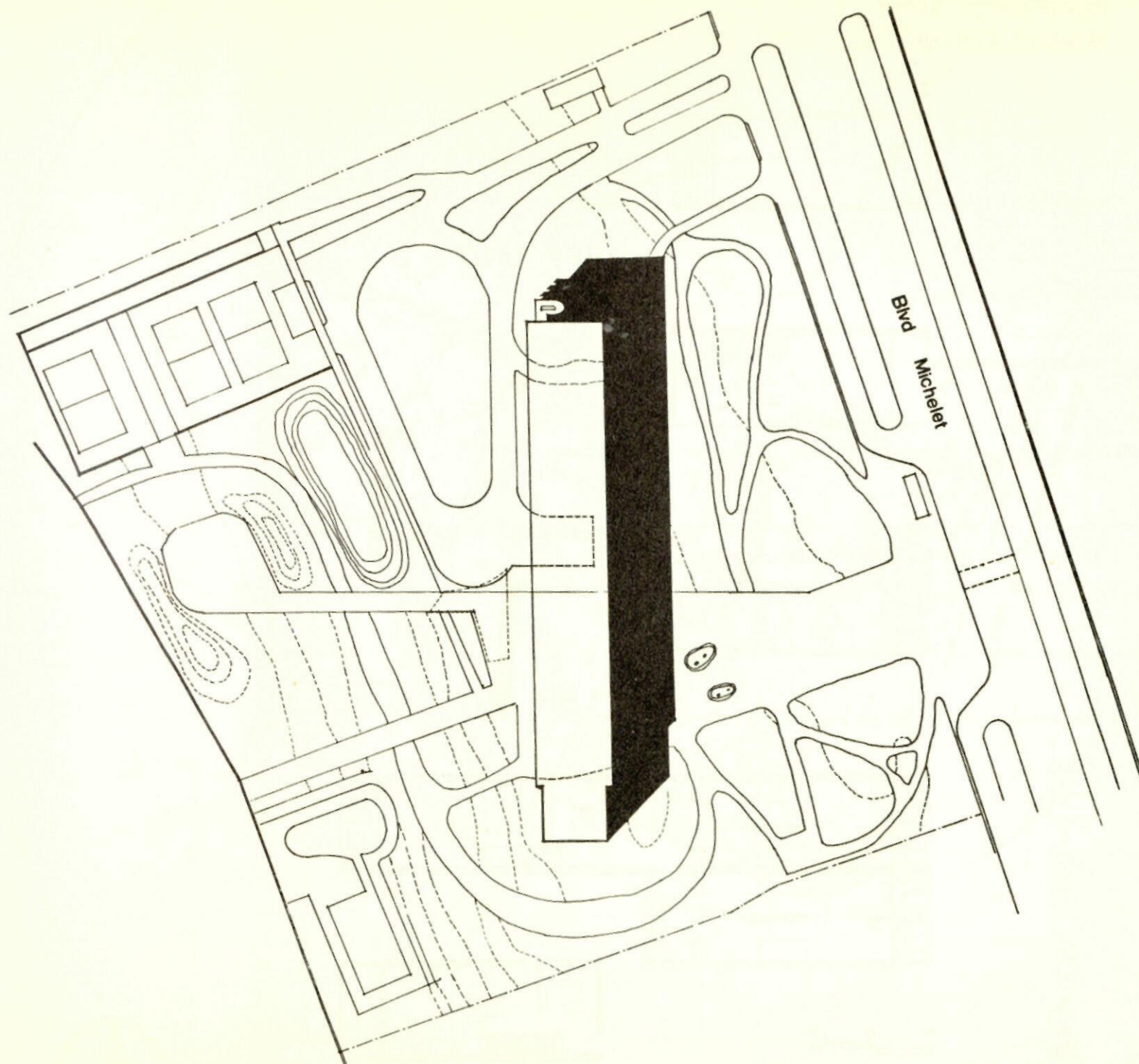
Accurate information not available

DOWNTOWN - 3 MILES

MUSEUM/STADIUM/PARK - 1 MILE







## UNITE D'HABITATION

Address: Boulevard Michelet, Marseilles, France

Architect: Le Corbusier

Owner: Not available

Date of Completion: Fall, 1952

### SITE CHARACTERISTICS:

Total Site Area.....1.0 acre  
 Total Building Coverage.....30,000 s.f.  
 Bldg.Coverage / Site Area.....6.8 %  
 People / Acre.....139  
 Dwelling Unit / Acre.....29.5  
 Parking: Structure.....none  
     On Grade.....1,240 s.f.  
 Parking / Dwelling Unit.....0.2/1  
 Open Space: For People.....350,950 s.f.  
     For Auto.....51,050 s.f.

### FACILITIES ON THE SITE:

(X)-- Nursery  
 (X)-- Daycare Center  
 (X)-- Doctors/Dentists  
 (X)-- Grocery Store  
 (X)-- Playground  
 (X)-- Tennis Court  
 ( )-- Basketball Court  
 (X)-- Swimming Pool  
 (X)-- Community Hall

### BUILDING TYPES ON THE SITE:

(A) Tower ( stories).... none  
 (B) Slab (17 stories).... 1  
 (C) Walkup ( stories).... none  
 (D) Row..... none  
 (E) Other..... none

### PEOPLE:

not available

White.....%

Non-White.....%

Income Groups: Welfare % Low %  
                   Middle % High %

### ECONOMICS:

Total Project Cost.....2 Billion Franc ('52)  
 Cost per sq.ft.....  
 Maintenance per year or month..  
 Amortization Period.....  
 Financing..... not available  
 Vacancy Rate.....  
 Turnover Rate.....



# UNITE D'HABITATION

Address: Boulevard Michelet, Marseilles, France

Architect: Le Corbusier

Owner: Not available

Date of Completion: Fall, 1952

TYPE OF BUILDING: Slab

INCOME: Designed for Low but occupied by Moderate

## BUILDING CHARACTERISTICS:

Gross Building Area..... 30,000 s.f.

Net Usable Area..... not avail.

Efficiency Index(Usable/Gross Bldg).... not avail.

Types of Dwelling Unit in the Building:

Efficiency \_\_\_\_\_ units 3-BR \_\_\_\_\_ units

1-BR \_\_\_\_\_ units 4-BR \_\_\_\_\_ units

2-BR \_\_\_\_\_ units 5-BR \_\_\_\_\_ units

Structural: Reinforced Concrete

Mechanical: Hot Water Heating

Services: Laundry

Building Regulations: none

## DWELLING UNIT CHARACTERISTICS:

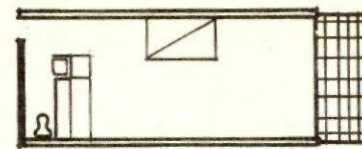
Type of DU	Eff.	1-BR	2-BR	3-BR	4-BR	5-BR
BALCONY	36.0	36.0		36.0		36.0
LR	204.0	108.0		108.0		108.0
DR		132.0		132.0		132.0
K	22.5	51.0		51.0		51.0
BR 1	--	140.0		140.0		140.0
BR 2	--	--		162.0		162.0
BR 3	--	--		162.0		162.0
BR 4	--	--		--		162.0
BR 5	--	--		--		162.0
Net Lvg	262.5	467.0		791.0		1115.0
BATH	25.0	51.0		51.0		51.0
STORAGE						
OTHERS	12.5	274.0		274.0		82.0
Gross Unit	300.0	792.0		1116.0		1248.0
Net L/G.U.	87 %	60 %		71 %		89 %
Rent/month	( not available )					

Any extra rent for

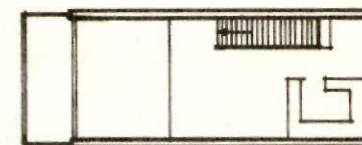
Parking..... not available

Recreational Facilities... not available

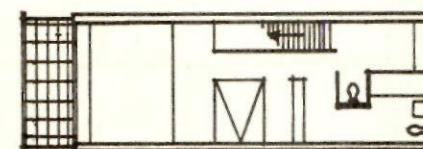
## REMARKS:



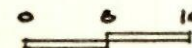
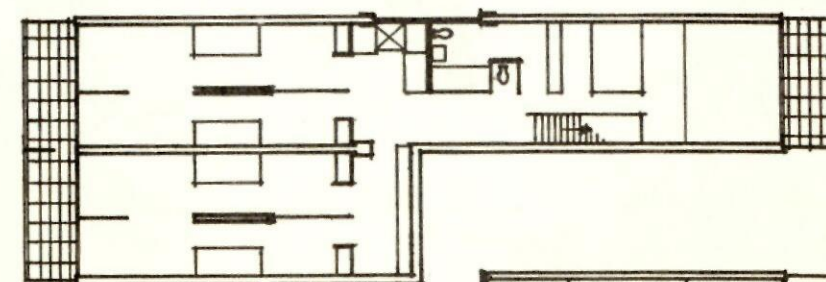
EFF UNIT



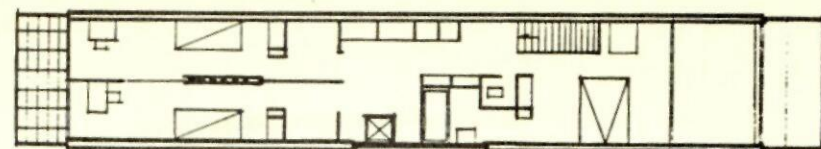
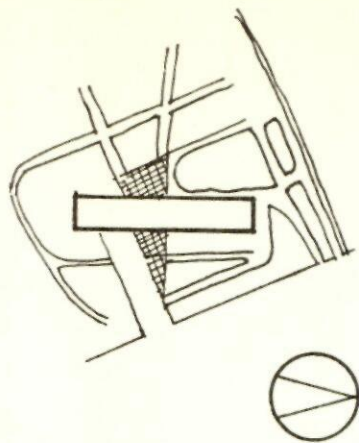
1 BR UNIT



5 BR UNIT



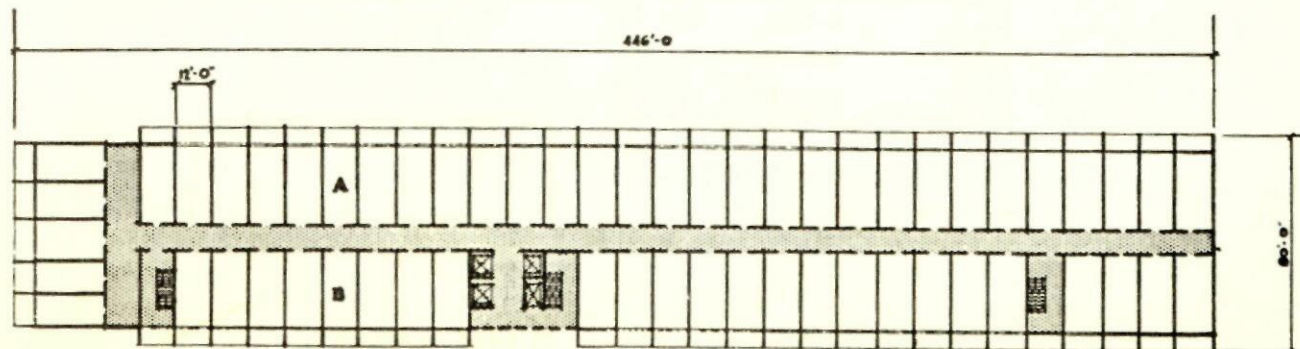
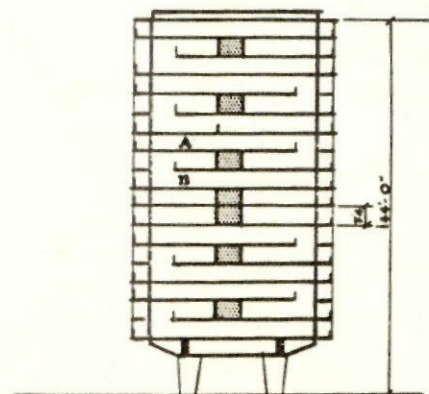
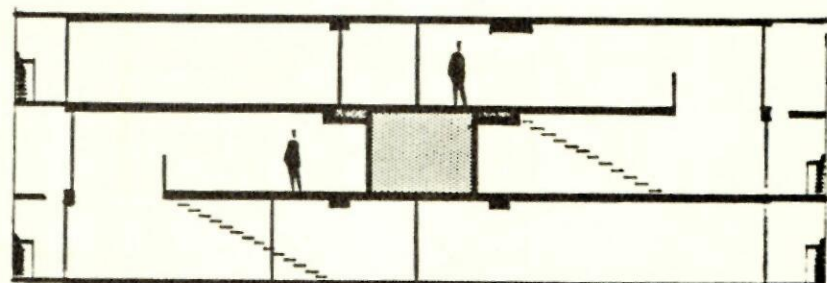
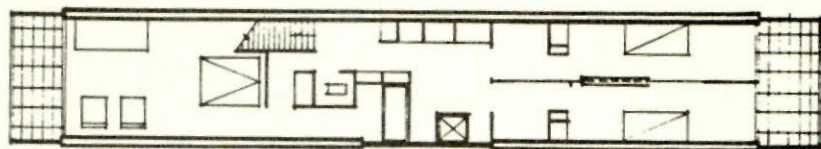




3 BR UNIT



3 BR UNIT



## UNITE D'HABITATION

Address: Boulevard Michelet, Marseilles, France

Architect: Le Corbusier

Owner: Not available

Date of Completion: Fall, 1952

TYPE OF BUILDING: Slab

INCOME: Designed for Low but occupied by Moderate

### BUILDING CHARACTERISTICS:

Gross Building Area.....30,000 s.f.

Net Usable Area.....not avail

Efficiency Index(Usable/Gross Bldg).....not avail

Types of Dwelling Unit in the Building:

Efficiency	units	3-BR	units
1-BR	units	4-BR	units
2-BR	units	5-BR	units

Structural: Reinforced Concrete

Mechanical: Hot Water Heating

Services: Laundry

Building Regulations: none

### DWELLING UNIT CHARACTERISTICS:

Type of DU	Eff.	1-BR	2-BR	3-BR	4-BR	5-BR
BALCONY	36.0	36.0		36.0		36.0
LR	204.0	108.0		108.0		108.0
DR		132.0		132.0		132.0
K	22.5	51.0		51.0		51.0
BR 1	--	140.0		140.0		140.0
BR 2	--	--		162.0		162.0
BR 3	--	--		--		162.0
BR 4	--	--		--		162.0
BR 5	--	--		--		162.0
Net Lvg	261.5	467.0		791.0		1115.0
BATH	25.0	51.0		51.0		51.0
STORAGE						
OTHERS	12.5	274.0		274.0		82.0
Gross Unit	300.0	792.0		1116.0		1248.0
Net L/G.U.	87 %	60 %		71 %		98 %
Rent/month	(not available -----)					

Any extra rent for

Parking..... not available

Recreational Facilities... not available










REMARKS:



## SAKURADAI in YOKOHAMA, JAPAN

- This neighborhood consists of high and middle income-bracket people.
- This new "bedroom" area near Tokyo (63 min-train-ride away) was developed by a railroad company in the mid 1960's to serve primarily the people working in Tokyo.
- This neighborhood is on a hilly terrain.

### LAND USE (Within the 10 min-walk vicinity)

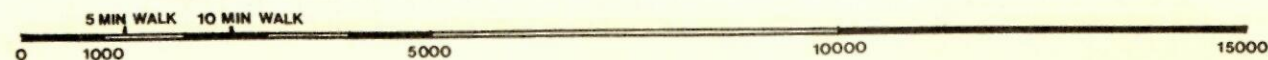
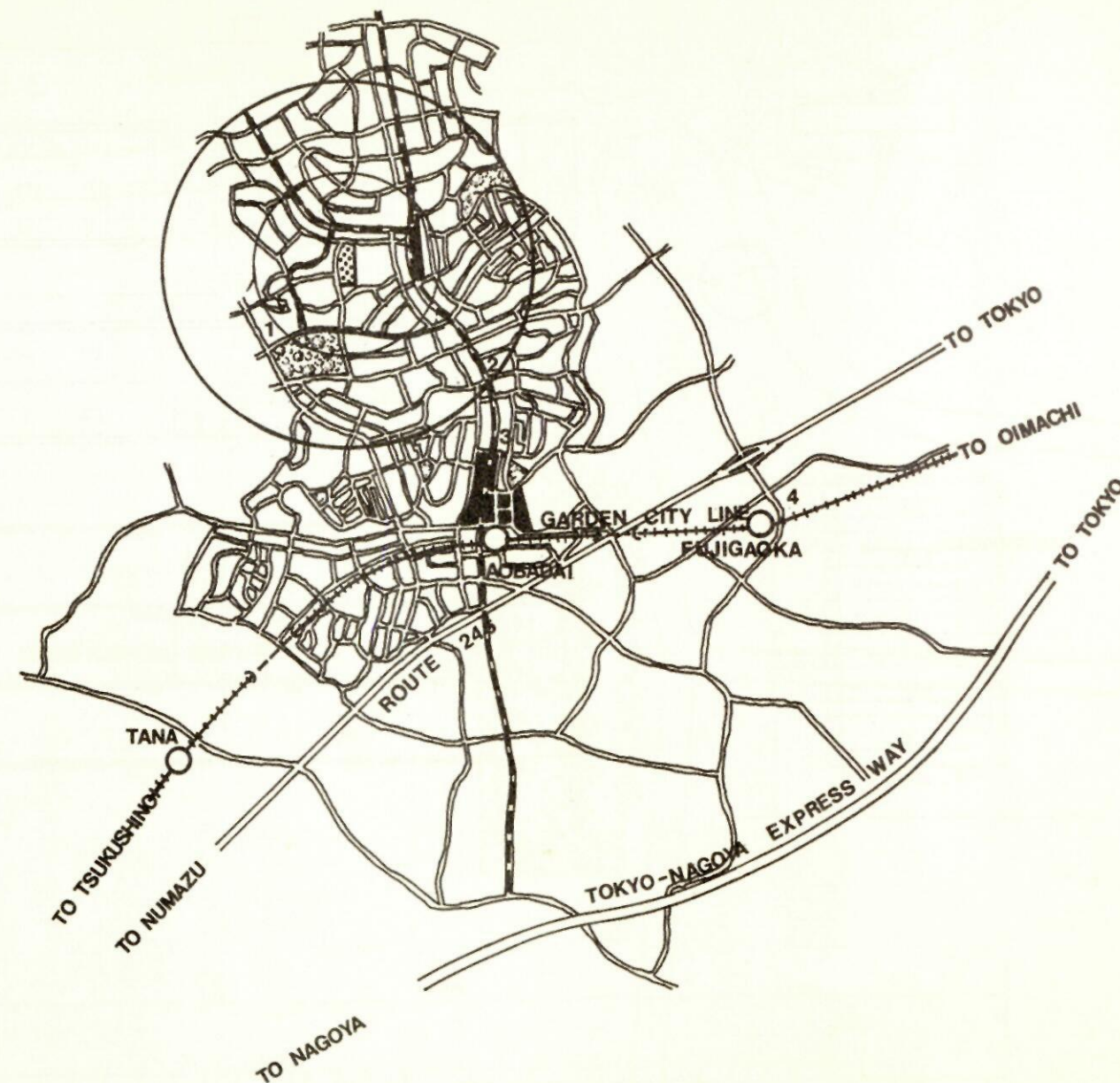
-  Commercial (Local retail & service stores)
-  Business (Retail business & offices)
-  Residential
-  Housing Project Area
-  Industrial
-  Park/Open Space
-  Subway
-  Bus/Trolley
-  Commuter Train
- Inner Circle----- 5 min-walk
- Outer Circle----- 10 min-walk

### NAME OF THE HOUSING PROJECT IN THE NEIGHBORHOOD:

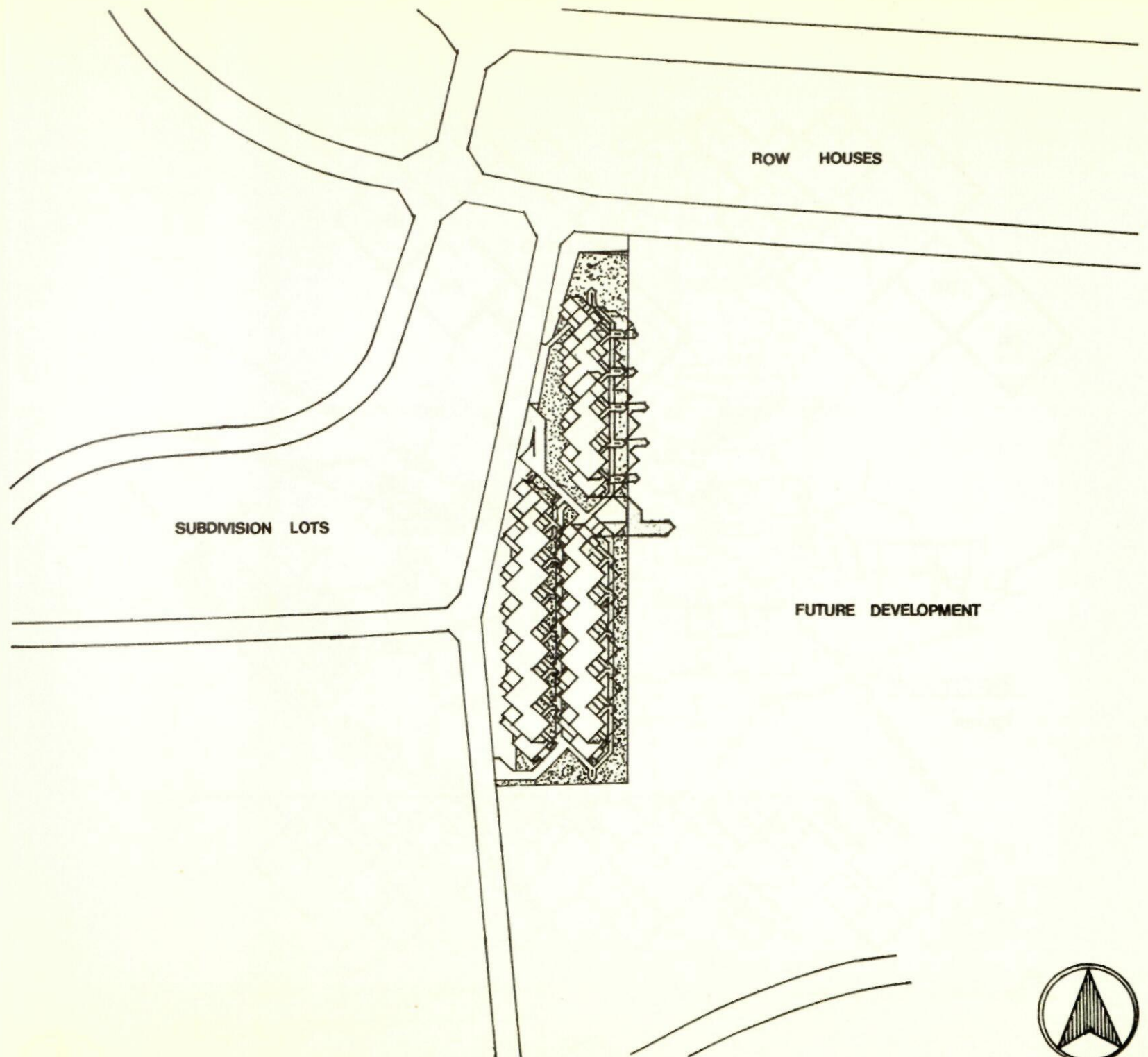
Sakuradai

### FACILITIES IN THE NEIGHBORHOOD:

- (1) Elementary School
- (2) Secondary School
- (3) Clinics
- (4) Medical Center







## SAKURADAI COURT VILLAGE

Address: Kohoku-Ward, Yokohama, Japan

Architect: Shozo Uchii

Owner: Tokyu Real Estate Co., Ltd.

Date of Completion: Fall, 1970

### SITE CHARACTERISTICS:

Total Site Area.....	1.21 acre
Total Building Coverage.....	19,600 s.f.
Bldg. Coverage / Site Area.....	37.3 %
People / Acre.....	195
Dwelling Unit / Acre.....	33
Parking: Structure.....	none
On Grade.....	6,420 s.f.
Parking / Dwelling Unit.....	0.8/1
Open Space: For People.....	26,780 s.f.
For Auto.....	6,420 s.f.

### FACILITIES ON THE SITE:

- ( ) -- Nursery
- ( ) -- Daycare Center
- ( ) -- Doctors/Dentists
- ( ) -- Grocery Store
- ( ) -- Playground
- ( ) -- Tennis Court
- ( ) -- Basketball Court
- ( ) -- Swimming Pool
- ( ) -- Community Hall

### BUILDING TYPES ON THE SITE:

- (A) Tower ( stories).....none
- (B) Slab ( stories).....none
- (C) Walkup (2-3 stories).....3
- (D) Row .....none
- (E) Other .....none

### PEOPLE:

White.....	0 %
Non-White.....	100 %
Income Groups: Welfare -- %	Low -- %
Middle 30 %	High 70 %

### ECONOMICS:

Total Project Cost.....	\$ 900,000 (w/o land)
Cost per sq.ft.....	not avail.
Maintenance per year or month..	\$ 1,600/month
Amortization Period.....	none
Financing.....	none
Vacancy Rate.....	60 %
Turnover Rate.....	0



# SAKURADAI COURT VILLAGE

Address: Kohoku-Ward, Yokohama, Japan

Architect: Shozo Uchi

Owner: Tokyu Real Estate Co., Ltd.

Date of Completion: Fall, 1970

TYPE OF BUILDING: Walk-up

INCOME: High

## BUILDING CHARACTERISTICS:

Gross Building Area..... 42,800 s.f.

Net Usable Area..... 34,800 s.f.

Efficiency Index(Usable/Gross Bldg)..... 81 %

Types of Dwelling Unit in the Building:

Efficiency	-- units	3-BR	34 units
1-BR	-- units	4-BR	2 units
2-BR	4 units	5-BR	-- units

Structural: Reinforced Concrete

Mechanical: Air Conditioning (oil)

Services: Laundry

Building Regulations: none

## DWELLING UNIT CHARACTERISTICS:

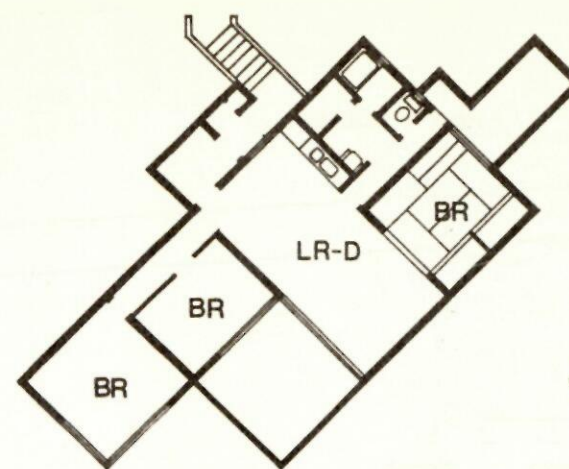
Type of DU	Eff.	1-BR	2-BR	3-BR	4-BR	5-BR
BALCONY			70.0	89.0	100.0	
LR			267.0	267.0	267.0	
DR			(Combined w/ LR)			
K			(Combined w/ LR)			
BR 1			90.0	90.0	90.0	
BR 2			109.0	121.0	121.0	
BR 3			--	109.0	109.0	
BR 4			--	--	88.0	
BR 5			--	--	--	
Net Lvg			536.0	676.0	775.0	
BATH			100.0	100.0	100.0	
STORAGE			22.0	22.0	22.0	
OTHERS			60.0	60.0	96.0	
Gross Unit			718.0	858.0	973.0	
Net L/G.U.			75 %	79 %	80 %	
Rent/month			(not available)			

Any extra rent for

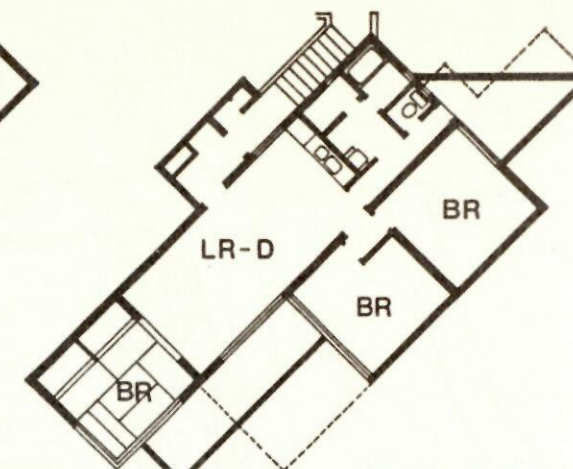
Parking..... \$ 9.00

Recreational Facilities... none

REMARKS:

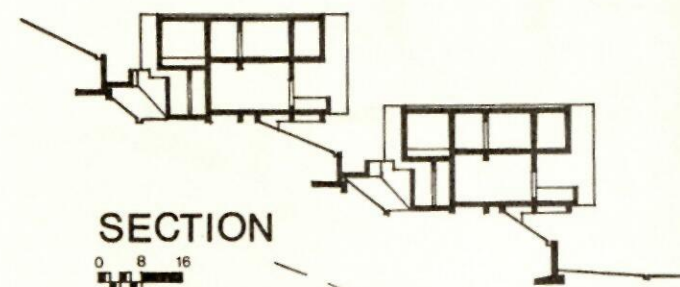


UPPER FLOOR

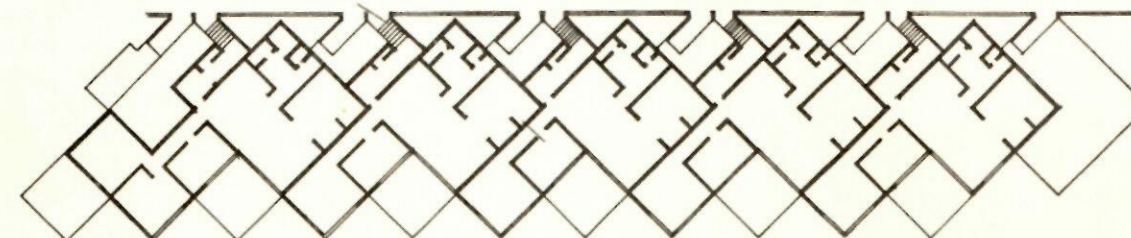
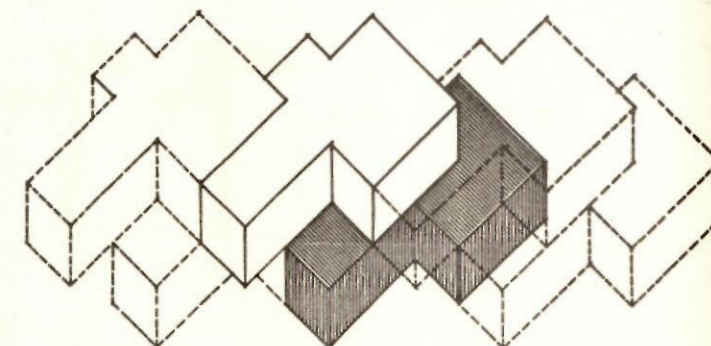
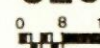


LOWER FLOOR

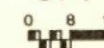
3 BR UNIT



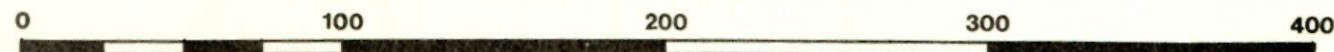
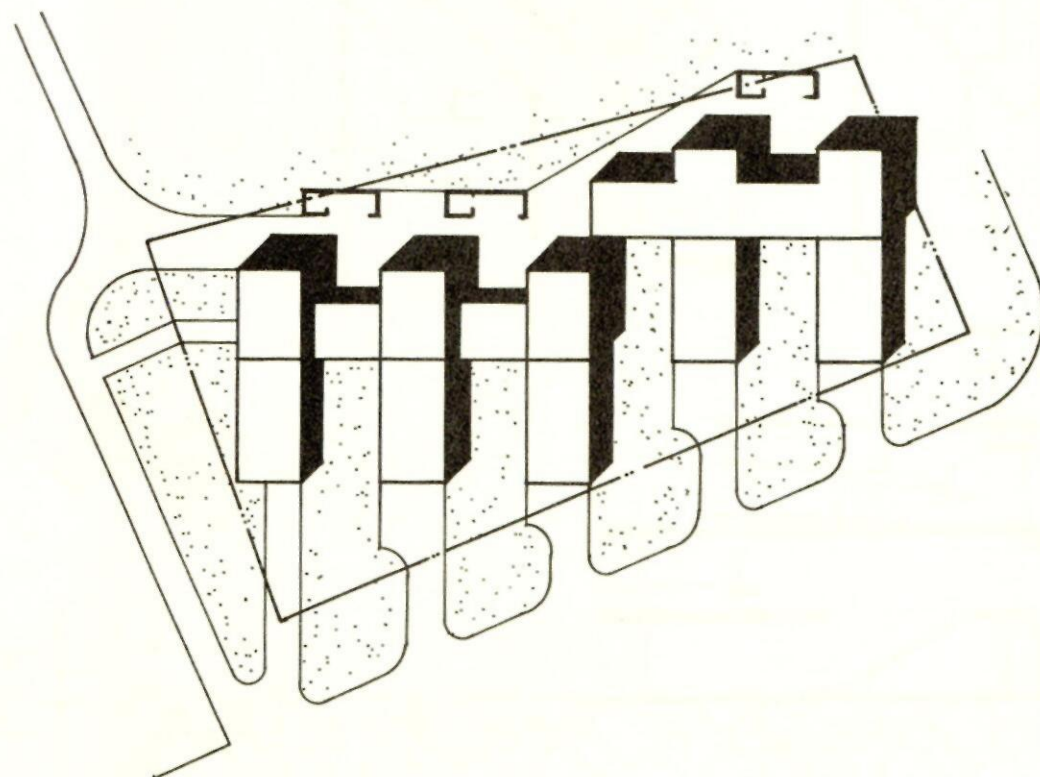
SECTION



UPPER FLOOR







## TAPIOLA HOUSING

Address: Tapiola, Finland

Architect: Heikki Siren

Owner:

Date of Completion: Spring, 1961

### SITE CHARACTERISTICS:

Total Site Area..... 25,000 s.f.  
 Total Building Coverage..... 8,400 s.f.  
 Bldg. Coverage / Site Area..... 33.7 %  
 People / Acre.....  
 Dwelling Unit / Acre.....9  
 Parking: Structure.....none  
           On Grade.....3,100 s.f.  
 Parking / Dwelling Unit.....1/1  
 Open Space: For People.....4,250 s.f.  
                   For Auto.....3,100 s.f.

### FACILITIES ON THE SITE:

- ( ) -- Nursery
- ( ) -- Daycare Center
- ( ) -- Doctors/Dentists
- ( ) -- Grocery Store
- ( ) -- Playground
- ( ) -- Tennis Court
- ( ) -- Basketball Court
- ( ) -- Swimming Pool
- ( ) -- Community Hall

These items are  
available in the  
town center.

### BUILDING TYPES ON THE SITE:

- (A) Tower ( stories).....none
- (B) Slab ( stories).....none
- (C) Walkup ( stories).....none
- (D) Row.....5
- (E) Other .....none

### PEOPLE:

White.....  
 Non-White.....  
 Income Groups: Welfare..... Low.....  
                                   Middle..... High.....

### ECONOMICS:

Total Project Cost.....  
 Cost per sq.ft.....  
 Maintenance per year or month..  
 Amortization Period.....  
 Financing.....  
 Vacancy Rate.....  
 Turnover Rate.....



# TAPIOLA HOUSING

Address: Tapiola, Finland

Architect: Heikki Siren

Owner:

Date of Completion: Spring, 1961

TYPE OF BUILDING: Row

INCOME: Middle

## BUILDING CHARACTERISTICS:

Gross Building Area..... 17,950 s.f.

Net Usable Area..... 14,750 s.f.

Efficiency Index(Usable/Gross Bldg)..... 82 %

Types of Dwelling Unit in the Building:

Efficiency -- units 3-BR 3 units

1-BR -- units 4-BR -- units

2-BR -- units 5-BR 2 units

Structural: Brick Bearing Walls with Wood Joists

Mechanical: not available

Services: not available

Building Regulations: none

## DWELLING UNIT CHARACTERISTICS:

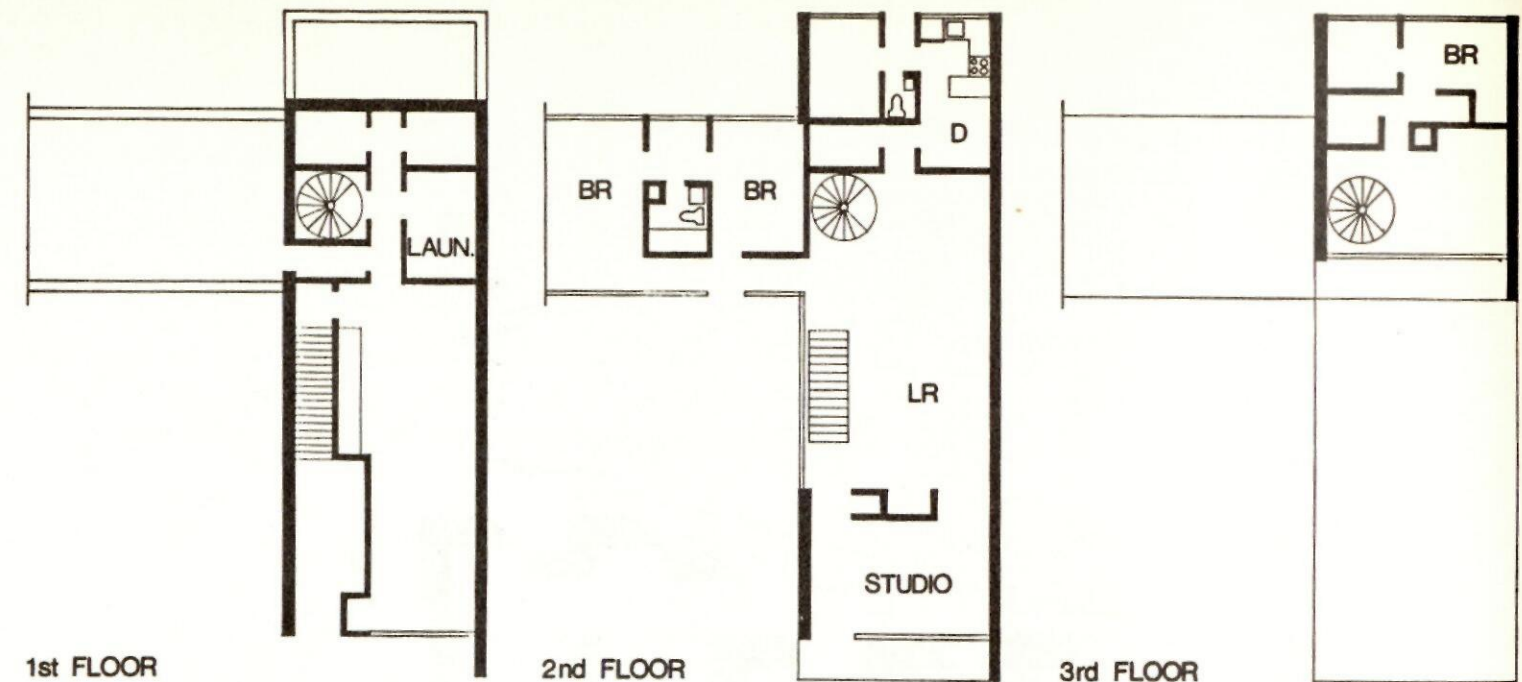
Type of DU	Eff.	1-BR	2-BR	3-BR	4-BR	5-BR
BALCONY				80.0		
LR				400.0		
DR				120.0		
K				90.0		
BR 1				120.0		
BR 2				180.0		
BR 3				140.0		
BR 4				--		
Studio				260.0		
Net Lvg				1470.0		
BATH				140.0		
STORAGE				800.0		
OTHERS (including garage)				560.0		
Gross Unit				2970.0		
Net L/G.U.				48 %		
Rent/month				N.A.		

Any extra rent for

Parking..... not avail.

Recreational Facilities... not avail.

## REMARKS:

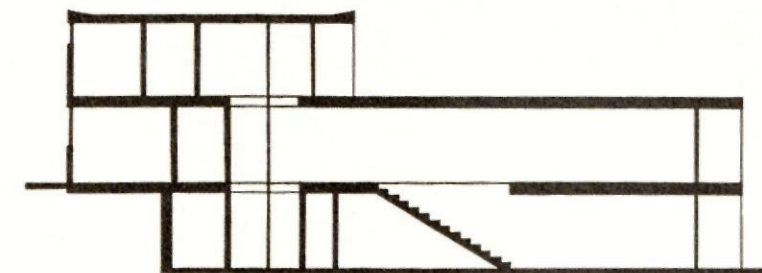
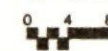


1st FLOOR

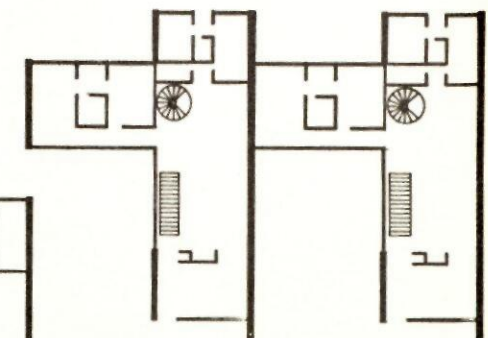
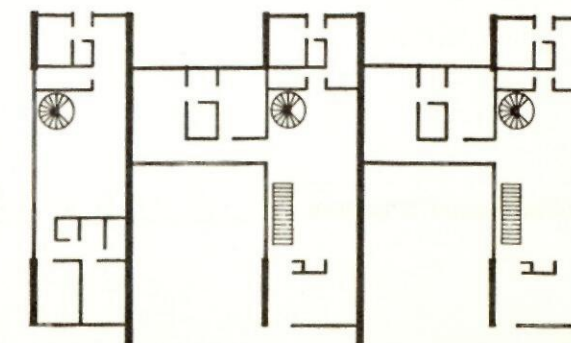
2nd FLOOR

3rd FLOOR

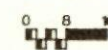
## 3 BR UNIT



## SECTION



## UNIT GROUPING





## 2b. Comparative international housing standards

In conjunction with the research of existing housing in Section 2c, it was deemed desirable to collect data on the particular standards which effected the individual project designs, as this forms a basis for comparative study. The uniform standards for the design of most publicly financed multi-family dwellings in the United States are a product of the Federal Government's Department of Housing and Urban Development (HUD). Minimum Standards for Multi-Family Dwellings are set by HUD and each project so financed must conform to these standards. As some of the housing studied are in foreign countries, the data collection was extended to include a variety of these foreign countries thus allowing a greater degree of comparability. The standards shown in the following table are governmental or widely accepted practice such that they are considered the standard for that country. Since some space allocations and other data are determined by different concepts and measurement, the differences are noted in the table and defined as follows:

USEFUL FLOOR SPACE: total dwelling area inside separating walls

LIVING FLOOR SPACE: total area of habitable rooms (living room, bedroom, kitchen, bath, entry hall, etc.)

LAND USE INTENSITY  
RATING:

a rating determined by HUD for a particular site prior to it's development. It is based on the characteristics of the site and it's location in the anticipated community pattern. The following factors are determined from this rating:

- the maximum square foot amount of total floor area permitted for each square foot of land area.
- the minimum square foot amount of open space which shall be provided for each square foot of floor area.
- the minimum square foot amount of non-vehicular outdoor space which shall be provided for each square foot of floor area.
- the minimum square foot amount of recreation space required for each square foot of floor area.
- the number of parking and garage spaces without time limits and the total number of parking and garage spaces for each dwelling unit including spaces without time limits and for limited time periods.



COUNTRY	UNITS OF MEASUREMENT	FLOOR AREA ft <sup>2</sup> by # of occupants						FLOOR AREA ft <sup>2</sup> by room							CEILING HEIGHT ft	WINDOW AREA FLOOR AREA ratio	OPERABLE SASH	INTERIOR TEMP f°	
		1 occ	2 occ	3 occ	4 occ	5 occ	6 occ	kit	dining	living	bath	master br	1 br	2 br					stor
FINLAND	useful flr. space	279	558	720	883	1000	n.a.	none			4 rooms: 2 w.c. + sauna	n.a.		108	3% unit area	8'-2"	1:10	n.a.	n.a.
NETHERLANDS	living flr. space	n.a.	n.a.	462	n.a.	560	n.a.	54	n.a.		38	n.a.			1 closet per room	liv. room 8'-2" b.r. 7'-6"	1:9	operable all rooms	kit: 62 bath: 70 liv: 70 bed: 59
NORWAY	useful flr. space	398	580	710	808	934	1000	n.a.	n.a.	n.a.	38	108	65	96	6.5 sq. ft. per person	8'-2"	1:10	n.a.	68
SWEDEN	useful flr. space	minimum: kitchen + 2 rooms: 543						75	n.a.	193 to 212	32 + w.c.	108 to 130	75	108 to 162	3.8 to 11.8 per person	8'-2"	1:10	n.a.	day: 64 to 72 night: 61
BELGIUM	useful flr. space	269	375	505	645	720	785	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	liv. room 8'-2" b.r. 7'-3"	n.a.	one air change per hour	54 to 68
CZECH	living flr. space	172	300	409	527	634	742	n.a.			38	none	75	108	n.a.	8'-6"	1:8	n.a.	65
	useful flr. space	279	430	591	742	860	1000												
HUNGARY	living flr. space	300	473	570	666	753	none	43	none	172 to 193	34	129 to 150	64 to 108	108 to 129	n.a.	8'-8"	1:8	66% window area	bath: 78 bed: 68
								86 to 108											
ITALY	ft. <sup>2</sup> per person	present standard: 87 per person. future standard: 108 per person						n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	21.4 per person	n.a.	n.a.	n.a.	n.a.
POLAND	living flr. space	193	290	375	482	624	656	48 to 64	n.a.	150 to 172	n.a.	97	64	97	5.8 per person	n.a.	1:8	.3 to 1 air changes per hour	66
RUMANIA	living flr. space	87	174	261	348	435	522	67	n.a.		43	n.a.			3.8 per person	n.a.	n.a.	n.a.	n.a.
U S S R	living flr. space	present standard: 97 per person. future standard: 140 per person						63	n.a.	161 to 193	32	108	n.a.	86	n.a.	n.a.	1:8	kit: 60 to 90 ft. <sup>3</sup> air per hr.	n.a.
JAPAN	useful flr. space	none						45	none		44	none	56	104	none	7'-6"	1:7	n.a.	none
U K	useful flr. space	322	430	612	753	810 to 1010	905 to 1050	90	225		n.a.	135	70 to 80	110		8'-6"	1:10	5% floor area	65
								110		162									
								180											
U S A	living flr. space	none						150 to 190		none	35	120	80	120	n.a.	8'-0"	1:10	5% floor area	varies by region
								210 to 280											
								60 to 80	110	170									



NOISE LEVEL db	PEOPLE per ACRE	SITE COVERAGE housing only	GREEN SPACE	AUTO PARKING	PUBLIC TRANSPORT	CHILD CARE FACILITIES			SCHOOLS		HEALTH CARE	COUNTRY
						1-3 years	4-6 years	walk ft.	walk ft.	pupils per classroom		
n.a.	40 to 60	n.a.	50% site	n.a.	n.a.	none	none	none	grade 1+2: 980 ft. max. 3+: 4500 ft. max.	grade 1+2: 34 3+: 40	n.a.	FINLAND
51	n.a.	n.a.	37 ft. <sup>2</sup> per person	1 place for every 6 people	every 1600 to 2600 ft.	none	none	none	n.a.	n.a.	n.a.	NETHERLANDS
n.a.	30 to 40	n.a.	n.a.	1 place per dwelling unit	none	40 places per 1000 people		none	2.5 miles max.	30	n.a.	NORWAY
40	2 stories: 10-14 4 stories: 20-26 4+stories: 30-45	25%	n.a.	200-500 places 1000 people	none	20,000 sq. ft. per 1200 to 1800 people		none	grade 1+2: 1600-2800 grade 3-9: 2800-3900	grade 1+2: 25 grade 3-9: 35	n.a.	SWEDEN
n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	BELGIUM
35	n.a.	11 to 20%: varies by height	136 to 260 ft. <sup>2</sup> per person	1 place for every 5 people 30% garaged	5 min. wait 5 min. walk	20 places per 1000 people	38 places per 1000 people	980 ft.	n.a.	40	1 doctor per 1000 people	CZECH
45	4 stories: 100 10 stories: 400	108 sq. ft. per person	43 to 65 ft. <sup>2</sup> per person	1 place for every 3 people 25% garaged	every 1600 ft.	12 to 20 places per 1000	19 to 40 places per 1000	1480 ft.	n.a.	average: 30-34 max: 42	1 doctor per 2500 people	HUNGARY
flr.-70 wall-40	city core: 200 neighborhood: 500	n.a.	53 to 160 ft. <sup>2</sup> per person	n.a.	none	none	none	none	none	25-40	n.a.	ITALY
n.a.	core fringe: 180	12 to 20%	86 to 160 ft. <sup>2</sup> per person	7 places for every 100 people 30% garaged	none	8 to 10 places per 1000	12 to 15 places per 1000	1600 ft.	1.75 miles max.	n.a.	1 doctor per 1000 people	POLAND
n.a.	n.a.	10 to 22%	20% living floor space	6 places for every 1000 ft. <sup>2</sup> living flr space	none	30% of total children	50% of total children	none	3300 max.	40 max.	1 clinic per 650,000 sq. ft. living flr. space	RUMANIA
45	n.a.	20 to 28%	n.a.	20 places for every 1000	none	30 to 40 places per 1000	40 to 50 places per 1000	980 to 1600 ft.	3300	n.a.	n.a.	U S S R
none	none	none	13 acres per city, 2500 ft. walk to park	none	none	regulated by local government			n.a.	n.a.	n.a.	JAPAN
50	2 stories: 12-20	varies with local authority	varies with local authority	varies with local authority	none	none	none	none	2-3 miles	30-40	n.a.	U K
interior: 25-30 exterior: 40-45	varies by land use intensity ratio	varies by land use intensity ratio	varies by land use intensity ratio	varies to max. 2 per dwelling	none	none	none	none	none	none	none	U S A







## 2c. Commentary on housing data collected

In an effort to become more cognizant of the non-visual aspects of these projects, the class collected specific information which, for the most part, consisted of variables commonly used by architects in describing a project. For example, we wanted to obtain a count of the number of various types of dwelling units in each project, and their respective floor areas. We also sought some basic measurements of the site, including overall acreage, the building coverage on the site, the area given over to parking as well as that reserved for open recreation, and so forth.

By abstracting this information from real projects, we could establish a basis for a more comprehensive and yet manageable comparative analysis. With the data in hand, we took some simple measures of central tendency (i.e., averages, maximums, minimums, and median values) and performed several elementary tabulations. After this manipulation, the data more efficiently described the general nature of all the projects, and could be used as a brief summary of their similarities and differences.

The data was collected for our better understanding and is passed on to the readers of this report for their own use and information. At this point in the housing study, the class purposefully made no attempt to use the statistics to accept or reject any hypothesis about user-needs; nor did we desire to draw any specific conclusions which would have been based largely on the data we collected. By our collection and inclusion of this data into the study, we do not mean to suggest that we prefer this approach to qualitative analysis. We believe rather, that it should be complimentary to qualitative analysis and that the data collected is not a self-sufficient substitute for interviews and other analytic methods which are employed in housing studies. We simply worked within the constraints of our own skills and the time allotted to us.



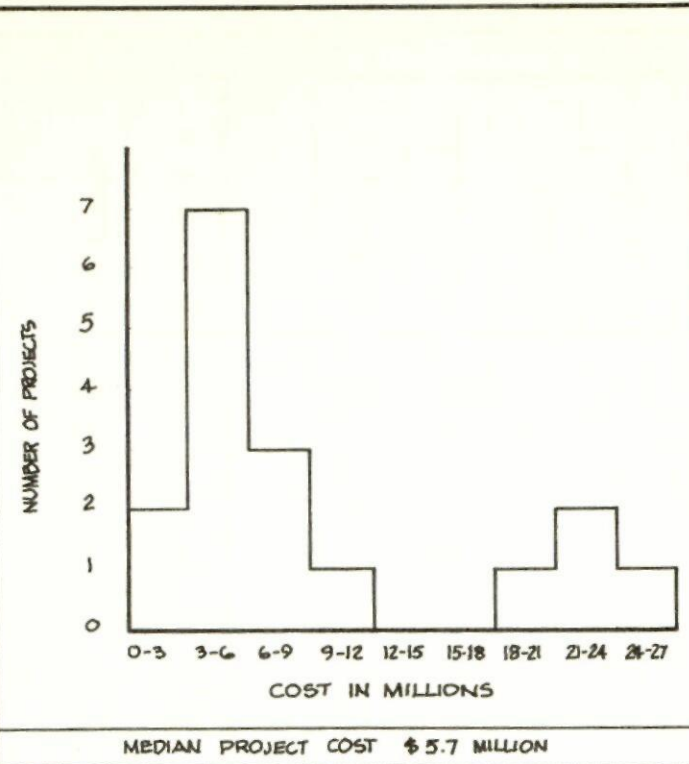
# Summary of Data

VARIABLE	PROJECT																				
	LOW INCOME												MIDDLE						HIGH		
	ACADEMY HOMES I	ACADEMY HOMES II	BROOK HOUSE L.	CASTLE SQUARE	CHURCH STREET	COLUMBIA POINT	NORTHERN CANAL	ROX.S.E. HOMES	ULIN HOUSE	WARREN GARDENS	WESTMINSTER CT.		BROOK HOUSE M.	CHARLESBANK	CHARLES' NEWTOWN	NORTH HARVARD	PEABODY TERR.		BROOK HOUSE H.	CHARLES RIVER PK.	HARBOR TOWERS
CONSTRUCTION TYPE	4	4	5	2	3	2	4	4	1	5	4		3	2	1	4	2		3	2	2
FINANCING	22ID3	22ID3	37 H	22ID3	22ID3	FHA	22ID3	22ID3	na	22ID3	22ID3		22ID3	22ID3	22ID3	22ID3	PRIVATE		220	FHA	220
NUMBER OF EFFICIENCY APARTMENTS	.	.	.	33	.	.	.	.	72	22	.		7	184	.	.	72		145	202	.
" " ONE BEDROOM "	23	22	36	202	5	196	48	60	171	13	24		35	92	19	72	200		401	424	312
" " TWO BEDROOM "	42	84	28	159	102	584	168	121	.	.	46		56	.	98	40	200		174	274	156
" " THREE BEDROOM "	80	130	4	132	151	486	51	117	.	180	.		18	.	113	60	25		42	22	156
" " FOUR BEDROOM "	41	79	.	65	9	180	.	.	.	12	.		.	.	32	40	.		.	.	.
" " FIVE BEDROOM "	16	.	.	.	34	48	.	.	.	.	.		.	.	.	.	.		.	.	.
NUMBER OF PARKING SPACES	0	315	68	900	301	1494	267	250	40	227	70		126	350	262	270	375		762	na	624
TOTAL AREA OF SITE IN ACRES	4.7	13.5	15.6	15.0	8.3	51.1	8.5	8.9	3.74	9.8	2.6		15.6	2.3	7.7	5.7	5.9		15.6	10.5	7.9
PARKING COVERAGE IN ACRES	0	1.4	7.5	4.8	1.6	3.75	1.2	1.6	.2	.9	.3		7.5	1.3	1.2	1.1	2.5		7.5	na	1.3
OPEN RECREATIONAL AREA (ACRES)	2.8	8.3	10.0	5.7	3.2	30	6	1.6	3	8	1.5		10.0	.25	2.3	1.1	2.6		10.0	.46	.16
BUILDING COVERAGE (ACRES)	1.6	1.7	3.75	4.9	2.5	5	1.4	2.4	.5	1	.5		3.75	.2	1.0	1.8	1.3		3.75	2.0	.45
COST OF CONSTRUCTION (\$MILLIONS)	3.3	5.7	22	10	6.5	22	4.6	7.2	3	4	1.28		22	3.9	4.5	5	9		22	25.0	20
PAYMENT FOR EFFICIENCY (DOLLARS)	.	.	.	na	.	.	.	.	96	85	.		118	165	.	.	115		225	240	.
" " ONE BEDROOM	101	114	100	116	100	na	109	123	132	100	118		123	215	126	125	150		295	335	285
" " TWO BEDROOM	116	127	121	131	120	na	121	145	.	.	134		126	.	146	150	170		375	400	525
" " THREE BEDROOM	140	138	132	135	140	na	137	166	.	147	.		136	.	171	177	200		475	na	725
" " FOUR BEDROOM	162	149	.	160	156	na	.	188	.	155	.		.	.	188	195	.		.	.	.
" " FIVE BEDROOM	175	.	.	.	165	na	.	.	.	.	.		.	.	.	na	.		.	.	.
TURNOVER RATE %	10	16	3	5	0	na	.02	na	na	11	6		3	10.8	na	na	60		na	10	na
VACANCY RATE %	0	0	6	0	0	10	0	na	na	2	0		1	0	0	na	0		na	3.8	na
% NON-WHITE	100	100	1	35	95	85	50	95	2	99	100		1	na	na	na	na		1	na	2
% WELFARE	0	0	0	30	32	45	0	10	0	36	2		0	0	na	na	.		0	0	0
% LOW INCOME	100	100	12.5	60	68	55	50	70	100	44	98		12.5	0	na	na	.		12.5	0	0
% MIDDLE INCOME	0	00	12.5	10	0	0	50	20	0	20	0		12.5	100	na	na	.		12.5	0	32
% UPPER INCOME	0	0	75.0	0	0	0	0	0	0	0	0		75.0	0	na	na	.		75.0	100	68
PEOPLE PER ACRE	83	68	63	193	213	120	22	223	98	na	80		63	180	105	167	248		63	na	184
DWELLING UNITS PER ACRE	42.8	23.4	24.3	40	36.3	30	31	36.7	65	11.2	24		24.3	120	34	37.2	na		24.3	na	91.2
PARKING TO DWELLING UNIT RATIO	0:0	1:1	1.1:1	1.3:1	1:1	1:1	1:1	.7:1	.2:1	1:1	1:1		1.1:1	1.3:1	1:1	1.3:1	.75:1		1.1:1	na	2:1



# TOTAL NUMBER OF DWELLING UNITS AND COST DISTRIBUTION

PROJECT NAME	NO.	# D.U.	COST
ACADEMY HOMES I	1	202	3.3
ACADEMY HOMES II	2	315	5.7
BROOK HOUSE L	3	68	.
CASTLE SQUARE	4	591	10.0
CHURCH STREET	5	301	6.5
COLUMBIA POINT	6	1494	22.0
NORTH CANAL	7	267	4.6
R.O.X.S.E HOMES	8	358	7.2
ULIN HOUSE	9	243	3.0
WARREN GARDENS	10	227	4.0
WESTMINSTER COURT	11	70	1.28
BROOK HOUSE M	12	116	.
CHARLESBANK	13	276	3.9
CHARLES NEWTOWN	14	262	4.5
NORTH HARVARD	15	216	5.0
PEABODY TERRACE	16	497	9.0
BROOK HOUSE H	17	762	22.0
CHARLES RIVER PARK	18	922	25.0
HARBOR TOWERS	19	624	20.0



# MEAN NUMBER DWELLING TYPE

TYPE	STATISTICS	EFF.	1 BR	2 BR	3 BR	4 BR	5 BR	TOTAL
HIGH	MEAN	173	1137	604	532	.	.	.
	TOTAL	347	379	201	117	.	.	1682
MIDDLE	MEAN	87	87	98	54	36	.	.
	TOTAL	261	435	392	216	72	.	1376
LOW	MEAN	42	73	148	148	64	33	.
	TOTAL	126	803	1332	1332	448	99	4140

# MEAN MONTHLY PAYMENT OR RENT

TYPE	STATISTICS	EFF.	1 BR	2 BR	3 BR	4 BR	5 BR
HIGH	MEAN	232	305	433	491	.	.
	RANGE	225-335	295-335	375-525	475-725	.	.
MIDDLE	MEAN	132	146	148	171	191	.
	RANGE	115-165	113-215	126-170	136-200	188-195	.
LOW	MEAN	93	123	128	141	160	163
	RANGE	85-100	100-132	116-145	127-166	138-188	149-175

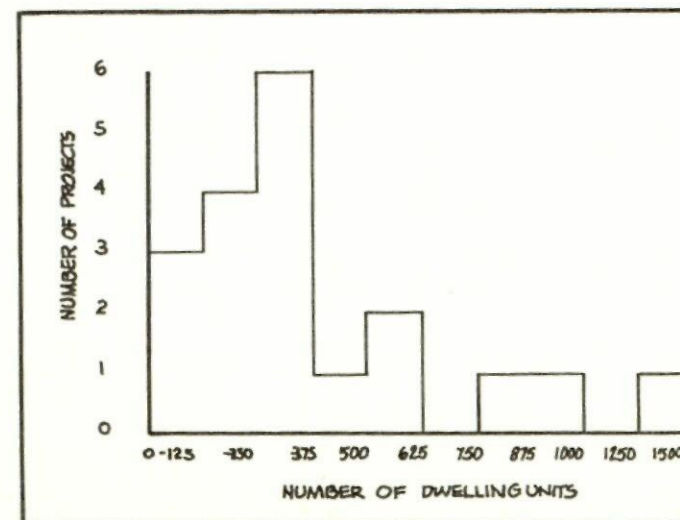
# MEAN ON-SITE PARKING UNITS

TYPE	# UNITS	# D.U.	%	RATIO
HIGH INC.	1368	1368	100	1:1
MIDDLE INC.	1373	1376	100	1:1
LOW INC.	3932	4140	95	.95:1

# MEAN TURNOVER AND VACANCY RATES

VARIABLE	HIGH	MID.	LOW	MEAN
TURNOVER	10.0	6.9	6.4	7.7
VACANCY	3.8	.25	2.0	2.1

# DWELLING UNIT DISTRIBUTION



# MEAN SITE COVERAGE AS A PERCENT OF THE TOTAL SITE

VARIABLE	HIGH	MIDDLE	LOW	MEAN
MEAN BUILDING COVERAGE	16.3	19.8	23.5	19.9
	ACRES: .45-375	0.2-1.8	0.5-5.0	.20-5.0
MEAN PARKING COVERAGE	32.0	36.3	15.8	28.0
	ACRES: 1.3-7.5	1.1-2.5	0-7.5	0-7.5
MEAN RECREATIONAL AREA	3.1	30.8	56.9	30.2
	ACRES: .46-10.0	.25-2.6	1.5-30.0	.25-30.0

# CONSTRUCTION TYPE

CODE	TYPE	#	CODE	TYPE	#
1	STEEL	2	4	PRECAST CONCRETE	6
2	POURED-IN-PLACE CONC.	6	5	WOOD	2
3	MASONRY	3	6	OTHER	0







### 3. Development of user-needs from general statements to specific guidelines for the physical setting

As in the Urban Design study, Housing and User Needs, age group classifications are established for a full range of user types. While the emphasis for urban designers lay in the derivation of particular user need statements from a very general theory of an urban environment, the emphasis for the architects of the Master's class was on the translation process of user need statements into specific designs for housing. For this reason, general statements concerning the needs of users are further delineated to specific criteria which can be measured or described. This measure can be applied both during the design process and as a utility indicator of relative success or failure of a completed design.



## dwelling unit

A dwelling unit is a container of a family unit. It must be planned to meet the needs of each member of the family as well as the family as a whole. The needs of a family can be categorized into three:

- the privacy of each individual member of the family;
- the community living of the family;
- the accommodation of visitors without unnecessary infringement upon the individual privacy and family life.

Each dwelling unit type in a multi-family housing project situation must also be planned to accommodate different types of family in terms of different age groups involved; for example

- 0-BR Unit : - young single  
- elderly single
- 1-BR Unit : - single  
- elderly single  
- young couple without a child or with just one baby  
- elderly couple
- 2-BR Unit : - couple with 1-2 children (0-6 yrs)  
- couple with 1-2 children (6-12 yrs)  
- couple with 1 child (teenager)
- 3-BR Unit : - couple with 2-4 children (0-6 yrs)  
- couple with 2-3 children (6-12 yrs)  
- couple with 2 children (teenagers)
- 4-BR Unit : - couple with 3-5 children (0-6 yrs)  
- couple with 3-4 children (6-12 yrs)  
- couple with 3 children (teenagers)
- 5-BR Unit : - couple with 4-6 children (0-6 yrs)  
- couple with 4-5 children (6-12 yrs)  
- couple with 4 children (teenagers)

Note: Capital lettered paragraphs indicate general statement of "user-needs" and the small lettered paragraphs indicate property dimensional guidance.

## DWELLING UNIT

REF. NO.	USER-NEEDS & PROPERTY DIMENSIONAL GUIDANCE
	A. <u>NOISE CONTROL</u>
101	REGARD QUIETNESS AS NECESSARY AMENITY WITHIN A DWELLING UNIT AND WITHIN ALL HABITABLE SPACES. SOUND INSULATION MUST BE PROVIDED FOR BEDROOMS SO THAT OCCUPANTS (PARTICULARLY TEENAGERS) CAN MAKE NOISE WITHOUT TOO MUCH DISTURBING OTHER MEMBERS OF FAMILY.
101.1	Acoustical Control of Each Space/Room: Each space/room should be provided with an adequate acoustical control so that conversation or music can be heard with reasonable accuracy.
101.2	Sound Insulation Between Bedrooms and Bath: The basic objectives in designing for quietness may be expressed as follows: a) To assure that bedrooms will be sufficiently quiet to prevent interference with sleep at any hour. b) To assure that other habitable spaces within dwelling unit will be quiet enough so that residents may carry on all normal activities without interruption or irritation. To express these objectives in terms of decibels*, the bedroom area should be less than 30 decibels and living area should be less than 50 decibels. Adequate sound insulation is particularly important between bedrooms and bath so that the noise of flushing or showering can be baffled from bedrooms
101.3	Sound Attenuation Between Bedroom Area and Living/Dining/Kitchen Area: There should be adequate sound barrier between bedroom area (night zone) and living/dining/kitchen area (day zone). The bedrooms area should be less than 30 decibels and living area should be less than 50 decibels. Inherent in the diminution of sound transmission is the advantageous to design into bedroom arrangements, subsidiary spaces such as closets and baths such that these create intermediate zones between bedrooms and living area.
101.4	Sound Insulation Between Floors: Adequate sound insulation should be provided between floors within a dwelling unit.  * The decibel scale measures the loudness of sounds, starting with 1 decibel which is the threshold of human audibility and goes up to about 130 decibels which is the limit of ears' endurance. The amount of decibels is a measure, on a logarithmic scale, of the sound energy. Thus a sound at 10 decibel level has 10 times as much energy as the just audible sound (1db) and a 60db sound is 10 times as strong as a 50db sound. A subway train is approximately 100db, a heavy traffic is 80db, normal conversation is 50db, and whispering is 20 db.



DWELLING UNIT	
REF. NO.	USER-NEEDS & PROPERTY DIMENSIONAL GUIDANCE
	<p><u>B. VISUAL CONTROL</u></p> <p>CONSIDER VISUAL PRIVACY, VISUAL SUPERVISION, AND VIEW TO OUTSIDE FROM EACH DWELLING UNIT. VISUAL SUPERVISION IS PARTICULARLY IMPORTANT FOR A MOTHER TO WATCH YOUNG CHILDREN WHILE SHE IS DOING HOUSE WORK.</p>
102.1	<p>VISUAL PRIVACY (VISUAL SEPARATION):</p> <p>a) Between Entries and Rooms-- Provide visual privacy between entries and the rooms within dwelling unit in order to avoid exposing the rooms to visitors.</p> <p>b) Between Bedroom Area and Living Area-- Provide visual privacy between bedroom area and living/ dining/ family room so that function in each area can be pursued without disturbing that of the bedroom area.</p> <p>c) Between Individual Bedrooms-- Visual privacy should be provided between master bedroom and children's bedrooms. Also, there should be visual privacy between the children's bedrooms so that each child can have his or her own private moment whenever desired.</p> <p>d) Between Bathroom and Other Rooms-- Bathroom interior should not be exposed to other habitable spaces as its occupant enters or exits, unless the bathroom is a private one such as the one for master bedroom.</p>
102.2	<p>VISUAL SUPERVISION (VISUAL CONNECTION):</p> <p>a) Between Kitchen and Family/Play Room-- There should be a close visual connection between kitchen and family/play room so that the mother can have contact with the rest of the family while she is cooking; and she can supervise young children while she is occupied with the house work in the kitchen.</p> <p>b) Between Living Area and Yard/Balcony-- Visual connection is necessary between the yard or balcony and the living area for the mother to supervise young children playing in the yard or on the balcony.</p> <p>c) Between Kitchen and Entries-- Easy visual connection should be able to be made between entries and kitchen so that the mother working in the kitchen can easily see visitors.</p>
102.3	<p>VISUAL EXTENSION (VIEW):</p> <p>There should be adequate view from the living/family room. It is always desirable to see an open space and sky from the living area of each dwelling unit.</p>
	<p><u>C. SUNLIGHT CONTROL</u></p>
103	<p>PROVIDE ADEQUATE SUNLIGHT (DIRECT OR INDIRECT) IN ALL HABITABLE ROOMS AND ON BALCONY OR IN YARD.</p>

DWELLING UNIT	
REF. NO.	USER-NEEDS & PROPERTY DIMENSIONAL GUIDANCE
103.1	<p>Adequate daylight is essential in every room. the amount of daylight in each habitable room is related to the size of the room and its proportions.</p> <p>- If any part of a room is more than 20 feet from a direct source of sunlight, the required glass area should be at least 15% of the floor area.</p>
	<p><u>D. AIR FRESHNESS CONTROL</u></p>
104	<p>REGARD GOOD NATURAL VENTILATION AS A NECESSARY AMENITY WITHIN DWELLING UNIT AND IN ALL HABITABLE SPACES.</p>
104.1	<p>Natural ventilation should be provided in each habitable room; in general, the opening for a natural ventilation is 5% of the floor area. Cross ventilation in individual rooms or through ventilation between rooms is essential for livable summer environment. For purposes of good natural air circulation, windows should be placed as near the ceiling as other considerations permit.</p>
104.2	<p>Mechanical ventilation should be provided in kitchen and bath. Kitchen stove is an atmospheric threat, hence a properly designed hood and gravity exhaust or fan should be provided.</p>
	<p><u>E. WEATHER CONTROL</u></p>
105	<p>PROVIDE WEATHER (RAIN, SNOW, COLD DRAFT, ETC.) BAFFLING DEVICE AT THE ENTRIES INTO A DWELLING UNIT.</p>
105.1	<p>Where the entries of a dwelling unit are adjacent to exterior, some device of weather baffling should be provided.</p>
	<p><u>F. SECURITY</u></p>
106	<p>PROVIDE A CONTROLLED ENTRANCE-DELIVERY AREA FOR EACH DWELLING UNIT TO ENHANCE SECURITY.</p>
106.1	<p>Since the family needs the dwelling unit as a refuge from the outside world, and since individual members need isolation, adequate dwelling space must give protection to the family from the outside, and to the individual members from the intrusion of the household itself; in short, security for privacy and belongings. The points of access to each dwelling unit must have a strong and reliable security device.</p>
	<p><u>G. SAFETY</u></p>
107	<p>ALL THE PHYSICAL ELEMENTS WITHIN EACH DWELLING UNIT SHOULD BE CAREFULLY DESIGNED AND LOCATED TO AVOID ACCIDENTS.</p>



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REF. NO.	USER-NEEDS & PROPERTY DIMENSIONAL GUIDANCE
107.1	Safety consideration on all the physical elements within a dwelling unit is necessary to avoid any accidents, particularly for young children and elderly people.
	H. <u>ACCESSIBILITY</u> (ABILITY TO ENTER AND EGRESS)
108	PROVIDE EASY ACCESS TO ALL THE ROOMS, CLOSETS, STAIRS, ETC. AND THERE SHOULD BE TWO MEANS OF EGRESS FROM EACH DWELLING UNIT IN CASE OF FIRE.
108.1	<p>Easy Accessibility:</p> <ul style="list-style-type: none"> <li>- Kitchen.....a) direct access to dining area</li> <li style="padding-left: 100px;">b) near living/family/play room and utility room</li> <li style="padding-left: 100px;">c) direct access to unit entrance and service entrance.</li> <li>- Bedrooms.....a) children's bedrooms should be easily accessible for parents.</li> <li style="padding-left: 100px;">b) Teenagers bedroom should be easily accessible from outside without creating any excessive disturbance.</li> <li>- Bathroom.....a) direct access from bedrooms.</li> <li style="padding-left: 100px;">b) accessible from living and working areas.</li> <li>- Living room....a) easy access to all other rooms within dwelling unit and also to stairs, corridors, balcony, yard, etc.</li> <li>- Dining Area</li> <li>- Closet/Storage.a) all closets and storage spaces should be appropriately located in relation to their principle uses.</li> <li style="padding-left: 100px;">b) storage spaces for housekeeping should be located within each dwelling unit.</li> </ul>
108.2	There should be two means of egress from each dwelling unit to the outside in case of a fire
	I. <u>CIRCULATION</u> (PASSAGE)
109	THE PASSAGE FROM ONE ACTIVITY AREA TO ANOTHER SHOULD BE EASY WITH MINIMAL DISTURBANCE TO THE OTHER ACTIVITIES OCCURRING ALONG THE PATH.
109.1	<p>Easy Circulation:</p> <p>Between main/minor entry and closet/storage--</p> <p>A closet/storage space should be provided close to the entry so that coats, umbrellas, boots, etc. can be put away before going through the rest of the dwelling unit.</p>
109.2	<p>Between main/minor entry and kitchen--</p> <p>The kitchen should be located near the main/minor entry so that grocery and garbage can be brought in and taken out with minimal length of passage.</p> <p>The minimal allowance for circulation between door and a closet would be set by the dimension necessary to accommodate a 90</p>

DWELLING UNIT	
REF. NO.	USER-NEEDS & PROPERTY DIMENSIONAL GUIDANCE
	swing of the entry door. However there must be adjacent to the entry door or very near to it, a sufficient space for pausing to remove coats and relieve oneself of other items in moderate comfort.
109.3	<p>Between main entry and living area--</p> <p>Circulation between the main entry and the living area should be direct but not as to interfere with the furniture placement, location of doors, etc.</p>
109.4	<p>Between main/minor entry and bedroom area--</p> <p>Circulation between the entry and bedroom area of dwelling should be carefully considered to insure that a member of the family coming home late at night can get to his bedroom without disturbing the rest of the family..</p>
109.5	<p>Between kitchen and family/play/dining room--</p> <p>There should be easy circulation between kitchen and dining, play, and family rooms. The mother working in the kitchen should be able to go to family room and play room very easily so that should there be a reason for the mother to be in the play room or family room, she can be there easily. The basic requirement in circulation patterns between the kitchen and dining areas is that the serving circulation from the kitchen to the dining room should occur without any cross traffic.</p>
109.6	<p>Between dining and living area--</p> <p>Living area can be separated from the dining area; however, there should be direct circulation between the two rooms.</p>
109.7	<p>Between bathroom and living, dining, family, and play areas--</p> <p>There should be a bathroom which can be easily accessed without passing through other areas of activity within the dwelling.</p>
109.8	<p>Between bedrooms and bath--</p> <p>There should be direct connection between bedrooms and bath.</p>
109.9	<p>Between master bedroom and children's bedrooms--</p> <p>Circulation between the master bedroom and children's bedroom should be direct so that parents can easily check on their children's welfare.</p>
109.10	<p>Between living, dining, play, and family areas and yard or balcony--</p> <p>The yard or balcony should be easily accessible from living, dining, play, and family areas without any cross traffic.</p> <p>The following table covers circulation of living room. Table source is HUD standards:</p> <ul style="list-style-type: none"> <li>60" minimum between facing seating</li> <li>24" minimum clear circulation between furniture grouping</li> <li>30" minimum clear for use of desk</li> <li>36" minimum clear for main traffic</li> <li>60" minimum distance between t.v. set and viewer's seating</li> </ul>



## DWELLING UNIT

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The following table covers total circulation space for one to six persons:

	1-2 pers.	3-4 pers.	5-6 pers.
a. Bedrooms and bath on the first floor:		(in square feet)	
Entry hall	20	20	20
Circulation, bedrooms & bath	0	15	25
Total	20	35	45
b. Bedrooms and bath on second floor:			
Entry hall	20	20	20
Circulation, bedrooms & bath	0	47	57
Total	20	67	77

#### J. USABILITY (FURNISHABILITY, CHANGEABILITY, DECORABILITY, ETC.):

DUE TO THE CONSTANT CHANGE OF RESIDENTS OF DIFFERENT TYPES IN EVERY DWELLING UNIT, EACH UNIT SHOULD BE MADE ADAPTABLE TO ACCOMMODATE

- CHANGES IN FAMILY SIZE, INCOME, LIFE STYLE, ETC.
- FURNISHABILITY OPTIONS
- DECORABILITY OPTIONS SUCH AS PLACES FOR GROWING PLANTS, DISPLAYING OBJECTS, HANGING CURTAINS, ETC.

#### 110.1 Usability of living room:

Assume that the space is allocated for the following activities: entertaining, reading, writing, listening to music, watching t.v. Also it will provide an area within or contiguous to living room for children play, if not provided for in a separate space. (Note: all these activities must be planned in close conjunction with noise control, visual control, sunlight control, odor control, safety, accessibility, circulation, etc. This note applies generally to text below)

The following list provides approximate areas allotted for furniture placement and open contiguous area desirable for more active recreation or for activities requiring additional equipment.

Furniture or Storage unit	Area s.f.	Additional Space Necessary for Use of Units	Total s.f.
sofa	21	3" from back & sides, 2'-6" from front	42
lounge chair	8	3" " " " " 2'-6" " "	17
end table	3	3" " " " " 1'-0" " "	5
straight chair	2	3" " " " " 2'-6" " "	7

table continued on next page...

## DWELLING UNIT

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Furniture/Storage	Area	Additional Space Necessary	Total
plants	3	3" from back & sides; 2'-0" from front	11
books, magazines	3	3" " " " " 2'-6" " "	13
records, names	3	3" " " " " 2'-6" " "	10
desk or table	10	3" " " " " 3'-0" " "	25
unspecified*	12	3" " " " " 2'-6" " "	27
coffee table	6	1'-6" clearance all around	30

\* pieces of furniture such as a chest, china closet, upright piano, etc.

As a rule of thumb, the average space required for recreation and self cultivation for 1 to 6 persons is as follows:

	1 pers	2 pers	3 pers	4 pers	5 pers	6 pers
furniture	53	67	79	100	118	129
storage	6	9	12	15	18	21
activity	66	88	130	171	221	233
total	125	164	221	286	357	383

#### 110.2

Usability of family/play room:

PROVIDE SPACE WITHIN THE DWELLING UNIT FOR INFORMAL FAMILY GATHERINGS AND CHILDREN'S PLAY, NOT INTERFERING WITH OTHER ACTIVITIES IN THE UNIT BUT EASILY ACCESSIBLE FROM THE KITCHEN SO THAT THERE IS CONTACT BETWEEN THE MOTHER PREPARING A MEAL IN THE KITCHEN AND THE REST OF THE FAMILY RELAXING IN THE FAMILY/PLAY ROOM. FAMILY ROOM SHOULD ALSO BE PLANNED TO BE USED BY MOTHER FOR IRONING, WATCHING TELEVISION, TELEPHONING, ETC.

The dimensional guidance for family/play room can be derived from that of the living room.

#### 110.3

Usability of the dining room:

Assume that the dining area or room is used only for the purpose of dining. Occasional guest attendance should be considered, and circulation through the dining area should be avoided. Space should be allotted in the dining area for china and eating utensil cabinet.

The following table outlines the dimensions of the dining area on the basis of the number of persons to be served and the proper circulation space:

# of pers	Furniture or Storage units	Area s.f.	Additional Space necessary for use	Total s.f.
2	table	6	3" from 4 adjacent sides	40
	chairs	4	included in table area	-
	china and linen storage	4	3" from back; 2'-6" in front	19
3	table	11	same as above	44
	chairs	7	same as above	
	china and linen storage	6	same as above	14

continued next page



## DWELLING UNIT

REF. NO.	USER-NEEDS & PROPERTY DIMENSIONAL GUIDANCE					
	# of pers	Furniture or storage units	Area s.f.	Additional space necessary for use		Total s.f.
110.4	5	table	14	3" from wall side; 3'-0" from all other sides		69
		chairs	11	included in table area		-
		china and linen storage	8	3" from back; 2'-6" in front		19
		server	5	3" same as above		13
	6	table	20	same as above		80
		chairs	14	included in table area		-
		china and linen storage	8	3" from back; 2'-6" in front		19
		server	5	same as above		13
	7	table	20	same as above		87
		chairs	16	included in table area		-
		china and linen storage	10	3" from back; 2'-6" in front		24
		server	5	same as above		13
	As a rule of thumb, the average space required for dining area per each type of dwelling unit is as follows:					
	D.U.	EFF.	1-BR	2-BR	3-BR	4-BR
	AREA	53	100	110	130	130
						150
	Usability of bedrooms:					
	PROVIDE A PRIVATE PLACE FOR STUDYING ALONE FOR SCHOOL CHILDREN, POSSIBLY WITH FRIENDS.					
	Assume that the bedroom be used for dressing, studying, reading, listening to music (for school children), displaying objects, etc. Bedrooms should be of sufficient size to alternate furniture arrangement, and it is necessary to have one wall with at least ten linear feet of uninterrupted surface for hanging objects and as a backdrop to seating.					
	The minimum space required for sleeping, dressing, and writing per one person is as follows:					
		Furniture or storage unit	Area s.f.	Additional space necessary for use		Total s.f.
		twin bed	24	3" one side and head 2'-0" for foot of bed 1'-6" for other side		47
		chair	2	3" from back; 2'-0" in front		6
		night table	2	same as above		6
		dresser	6	same as above		16
		desk	10	3" from back; 3'-0" in front		26
		closet	10	3'-0" in front		25
	The summary of space requirements for sleeping, dressing, and writing for 1 to 6 persons: (note: the space requirement is established in the assumption that the activities overlap, thus					

## DWELLING UNIT

REF. NO.	USER-NEEDS & PROPERTY DIMENSIONAL GUIDANCE					
110.5	reducing the total space requirement of the aggregate.)					
			1 pers	2 pers	3 pers	4 pers
	furniture	28	56	84	112	140
	storage	12	25	36	48	60
	activity	34	68	102	136	170
	total	74	149	222	298	370
	As a rule of thumb, the average space required for a bedroom is as follows:					
	Bedroom type:	Primary(master)	Double occ.	Single occ.		
	Area	221 s.f.	170 s.f.	119 s.f.		
	Usability of bathroom:					
110.6	Bathroom can be either a compartmentalized or a regular full bath. In either case, minimum space for circulation should be allotted between door and fixtures. The table below shows space allotment per fixture:					
	Unit type	Full bath	Lav. (w/ WC)	Comp. (w/ 1 lav.)	Comp. (w/ 2 lav.)	
	eff.	35 sf				
	1-BR	48				
	2-BR			52½ sf		
	3-BR (F)*	48		52½		
	3-BR (D)**		19½ sf	52½		
	4-BR (F)	48	19½	52½		
	4-BR (D)	48	19½		69½ sf	
	5-BR	48	26½		89½	
	* single story apartment (flat)					
	** duplex apartment					
	Usability of kitchen:					
	Assume that kitchen is primarily used for food preparation, but space for minimal dining and laundry machines should be considered, except for efficiency and one bedroom apartments.					
	The following table outlines the dimensions of the kitchen area on the basis of the number of persons to be served and the proper working space:					
	# of pers	Equip't and storage	Area s.f.	Additional space necessary for use		Total s.f.
	1	Range	3.5	Add 1'-6" to depth for oven door		12
		Refrigerator	6.3	Add 3" to depth; 6" to width; and 2'-6" for door		14
		Sink	5.5	Add 2'-6" to depth for use		11
		Base cabinet	9.0	Add 3'-0" to depth for use		22
	2	Range	4.0	same as above		12
		Refrigerator	6.3	same as above		16
		Sink	5.5	same as above		12
		Base cabinet w/ counter	17.0	same as above		43
		Broom closet	4.0	Add 2'-0" to depth to open door		15



## DWELLING UNIT

### REF. NO. USER-NEEDS & PROPERTY DIMENSIONAL GUIDANCE

# of pers	Equip't and storage	Area s.f.	Additional space necessary for use	Total s.f.
3 & 4	Range	6.0	see above	16
	Refrigerator	6.5	" "	16
	Sink	6.0	" "	12
	Base cabinet w/ counter	22.0	" "	55
	Broom closet	7.0	" "	14
	Chairs (2)	5.0	" "	11
5 & 6	Range	7.0	see above	17
	Refrigerator	8.0	" "	18
	Sink	6.0	" "	12
	Base cabinet w/ counter	27.0	" "	67
	Broom closet	8.0	" "	18
	Chairs (2)	5.0	" "	11

Working and circulation space to be considered:

- Min. side to side measure for a worker.....30"
- Min. front to back measure for a worker.....27"
- Min. distance from side of sink to turn in counter...18"
- Table space for a seated worker.....24"
- Min. distance between fixed equipment:
  - Front of sink and opposite equipment.....42"
  - Front of range and opposite equipment.....42"
  - Front of range or brm. clos. & opposite equip't...42"
- Front of refrigerator and opposite cabinet.....42"
- Front of two parts of equipment likely to be used....48" by two persons at the same time
- Front of drawer for standing room and pulling out....36" drawer from cabinet
- Front of drawer cabinet for pulling out drawer and...30" working at side

The summary of space requirement for food preparation, food preservation, laundry equipment, and minimal dining area: (Note: the space requirement is established on the assumption that the activities overlap, thus reducing the space requirement of the aggregate.)

	1 pers	2 pers	3 pers	4 pers	5 pers	6 pers
equipment space	8.3	9.5	17.0	17.0	18	18
storage space	15.4	27.3	35.5	35.5	43	43
activity space	16.7	61.2	71.5	71.5	80	80
laundry and minimal dining*						
total	40.0	98.0	124.0	124.0	141	141

As a rule of thumb, the average space required for a kitchen as an average linear feet of counter space are as follows:

D.U. Type:	Eff.	1-BR	2-BR	3-BP	4-BP	5-BP
Area	40 sf	105	115	130	145	155
Lin. ft.	11.6'	13'	16'	17'	17'	18'
of counter						

## DWELLING UNIT

### REF. NO. USER-NEEDS & PROPERTY DIMENSIONAL GUIDANCE

110.7

Usability of laundry:

MAKE PROVISIONS FOR WASHERS AND DRYERS WITHIN ALL FAMILY UNITS - i.e. 2-BEDROOM UNIT AND UP.

A separate laundry room may be provided in a 2-bedroom unit and up; however, if a separate laundry room is economically unacceptable, laundry area may be incorporated into kitchen as indicated above in "usability of kitchen (110.6)

110.8

Usability of storage spaces:

MAXIMIZE AMOUNT OF STORAGE SPACE IN ENTRY AREAS, BEDROOMS AND KITCHEN FOR YOUNG CHILDREN, PROVIDE SPACE FOR PLAY AND OTHER EQUIPMENT, SUCH AS PRAMS, TOYS, ETC., THAT IS CONDUSIVE TO A CHILD MAINTAINING HIS OWN ENVIRONMENT. FOR SCHOOL CHILDREN, PROVIDE STORAGE SPACE WHERE THEY CAN STORE OBJECTS OF HOBBY AND SCHOOL PROJECTS, ETC.

Storage spaces should be carefully planned so that different compartments within the spaces can be easily reached by all the users and also as many articles can be stored as possible without creating disorder when an article is taken out or stored. Allowance should be made for possible changes in the types and amounts of material to be stored.

The amount of storage space is influenced not only by the articles to be stored and the size and type of the dwelling unit, but also by the climate (raincoat, umbrella, boots, heavy overcoat, etc.). It is impossible and unreasonable to make provision for everything that every family may cherish, but undue limitation, forced by inadequate storage space is most unfortunate.

The greatest needs, in addition to sufficient general storage space are for:

- space near entrance for baby carriage, bicycles, prams, tires, garden tools, etc.
- hanging space near entrance for working clothes, childrens outdoor garments, raincoats, boots, etc.
- space for cleaning equipment, ironing board, etc.
- space for linen, towels, bedding, etc.
- space for tools, and maintenance supplies.
- space for toys and games
- general bulk storage for very infrequently used large articles.

The following data show the general dimensional guidance for storage spaces in various uses:

a) Storage space for bedrooms--

Room Type:	Primary (master)	Double Occup.	Single Occup.
Length: (lin. ft.)	6	7	4
Depth:	2'-0" clear, however 2'-6" is better		

b) Coat closet at entry--

Length: 3'-0", Depth: 2'-6"

c) Linen closet--

22" x 20" for D.U. up to 3-BR and 30" x 20" for D.U. over 3-BP

d) Broom closet--

1'-6" x 1'-3" (minimum)



## DWELLING UNIT

REF. NO.	USER-NEEDS & PROPERTY DIMENSIONAL GUIDANCE																		
	<p>e) General storage--</p> <table><tr><td>D.U. Type:</td><td>Eff.</td><td>1-BR</td><td>2-BR</td><td>3-BR</td><td>4-BR</td><td>5-BR</td></tr><tr><td>Cubic feet</td><td>80</td><td>80</td><td>112</td><td>144</td><td>176</td><td>210</td></tr></table> <p>Note: These volumes are provided inside the dwelling unit upon the assumption that at least one-third of the total storage space is already provided in the D.U.</p>	D.U. Type:	Eff.	1-BR	2-BR	3-BR	4-BR	5-BR	Cubic feet	80	80	112	144	176	210				
D.U. Type:	Eff.	1-BR	2-BR	3-BR	4-BR	5-BR													
Cubic feet	80	80	112	144	176	210													
110.9	<p>Usability of the foyer or vestibule:</p> <p>An area at entry, such as a foyer or vestibule, should be provided to serve the purposes such as diminishing cold draft during the winter, serving as a place for people to remove coats and other items in moderate comfort, and to see oneself in a mirror to tidy up.</p>																		
110.10	<p>Usability of stairs:</p> <p>Stairs inside a dwelling unit should be well lit and devoid of hazards; however, this should not discourage the designer from using the stairs as an architectonic element.</p> <ul style="list-style-type: none"><li>- Min. width of stair clear of handrail is 2'-8"</li><li>- Min. run should be 9" plus nosing.</li><li>- Balanced winders are acceptable if the run at a point 18" in from the converging end is not less than the run at a straight portion of the stair. The landing cannot be less than 2'-8" square.</li></ul>																		
110.11	<p>Usability of windows:</p> <p>Windows serve the purpose of ventilation and natural lighting; however, should consider a place at the window to put plants, a device to hang curtains, etc. without sacrificing the convenience of opening and closing the windows.</p> <p>Note: For the dimensional guidance, refer back to item number 103.1 : "Sunlight Control"</p>																		
110.12	<p>Usability of doors</p> <p>Size of doors should be based on the moving of different sizes of furniture and equipment in and out of the rooms within a dwelling unit. On top of this consideration, the doors connected to the outside of the dwelling unit should be carefully considered for their appearance and security.</p> <table><tr><td>Type of door:</td><td>Main entry</td><td>Service entry</td><td>Habitable room</td><td>Baths</td><td>For elderly</td></tr><tr><td>Width</td><td>3'-0"</td><td>2'-6"</td><td>2'-6"</td><td>2'-0"</td><td>3'-0"</td></tr><tr><td>Height</td><td colspan="5">-----6'-8"-----</td></tr></table>	Type of door:	Main entry	Service entry	Habitable room	Baths	For elderly	Width	3'-0"	2'-6"	2'-6"	2'-0"	3'-0"	Height	-----6'-8"-----				
Type of door:	Main entry	Service entry	Habitable room	Baths	For elderly														
Width	3'-0"	2'-6"	2'-6"	2'-0"	3'-0"														
Height	-----6'-8"-----																		

## DWELLING UNIT

REF. NO.	USER-NEEDS & PROPERTY DIMENSIONAL GUIDANCE
110.13	<p>Usability of balcony and yard:</p> <p>PROVIDE PRIVATE OUTDOOR SPACE ADJACENT TO DWELLING UNIT FOR INDIVIDUAL, GROUP, OR FAMILY ACTIVITIES WHICH DO NOT INTERFERE WITH OTHER DWELLING UNIT FUNCTIONS. PROVIDE ITS ORIENTATION SO AS TO MAXIMIZE CONTROLLED EXPOSURE TO SUNLIGHT.</p> <p>PROVIDE PRIVATE OUTDOOR SPACE FOR CHILDREN AGED 1-3 IN THE RANGE OF 100 SF FOR ONE CHILD, 150 SF FOR TWO, AND 25 SF FOR EACH ADDITIONAL CHILD.</p> <p>PRIVATE OUTDOOR OPEN SPACE SHOULD BE EASILY SUPERVISED FROM THE DWELLING UNIT, SUNLIT FOR MORE THAN 30% OF THE DAY, PARTIALLY PAVED AND WELL DRAINED.</p> <p>Where balcony serves as an outdoor space, it should be at least 6'-0" in depth and the average total area should be at least 72 square feet minimum.</p> <p>*****</p> <p><u>SPECIAL CONSIDERATIONS WITHIN A DWELLING UNIT FOR THE ELDERLY</u></p> <p>CONSIDER THE FOLLOWING WAITING AND SITTING ACTIVITIES ASSOCIATED WITH THE ELDERLY LIFE: A WINDOW SEAT, WAITING FOR MAIL, SHOWER WITH SEAT, ETC.</p> <p>THE DWELLING UNIT SHOULD CONTAIN PROVISIONS FOR A VARIETY OF HOBBIES AND OTHER PASSIVE ACTIVITIES: A PLACE TO GROW PLANTS, STORAGE, AND DISPLAY OF MEMORABILIA.</p> <p>CONSIDER THE FOLLOWING ACTIVITIES WITH RESPECT TO AN ELDERLY KITCHEN: REACHING TO STORAGE, COOKING AND PREPARING MEALS, CLEANING UP AFTER MEALS AND GENERAL HOUSE KEEPING, IRONING, TRASH REMOVAL, ETC.</p> <p>CONSIDER THE FOLLOWING MOBILITY REQUIREMENTS WITHIN THE DWELLING UNIT: CHANGES OF LEVELS TO BE AVOIDED, NEARNESS TO THE BATHROOM FROM SLEEPING AREA, WARM AND COLD DRAFT FREE INTERIOR ENVIRONMENT</p>



## d.u. cluster - highrise

A high-rise dwelling unit cluster -- or an elevator apartment building -- is a container of dwelling units. It must be planned to meet the needs of the resident of each dwelling unit, whether the needs are those of an elderly in an efficiency apartment or those of a family with six children in a 4-BR apartment; also, it must be planned to meet the needs of the entire residents within the building as a whole. The needs can be categorized in three groups:

the privacy of each individual dwelling unit;

the social interaction among the residents of the building;

the accommodation of visitors as well as service men in fulfilling their activities, such as finding the apartment they are looking for or delivering articles the service men have to deliver, etc. Such activities should be able to be carried out without any unnecessary infringement upon the privacy of each dwelling unit and other activity areas within the building.

Note: The capital lettered paragraphs indicate the general statement of "user-needs" and the small lettered paragraphs indicate the property dimensional guidance.

D. U. CLUSTER - high-rise	
REF. NO.	USER-NEEDS & PROPERTY DIMENSIONAL GUIDANCE
201	<p><b>A. NOISE CONTROL</b></p> <p>IN A HIGH-RISE APARTMENT, WHERE MANY DWELLING UNITS ARE PUT TOGETHER NOISE CONTROL IS EXTREMELY CRITICAL. THERE SHOULD BE A GOOD SOUND INSULATION BETWEEN DWELLING UNITS, BETWEEN DWELLING UNITS AND COMMON (PUBLIC) AREAS OR SPACES -- SUCH AS LOBBY, CORRIDOR, STAIR, ELEVATOR AREAS, LAUNDRY ROOM, MULTI-USE ROOM, NURSERY, DAY-CARE CENTER ETC. AND THE ACOUSTICS WITHIN THESE COMMON AREAS OR SPACES THEMSELVES.</p>
201.1	<p><b>Sound insulation between dwelling units:</b></p> <p>Sound insulation between dwelling units are very critical, particularly in a dwelling unit where a baby may be crying often or in a dwelling unit where people are having a party.</p> <p>The basic objectives in designing for quiet may be expressed as follows:</p> <ol style="list-style-type: none"> <li>To assure that bedrooms in each dwelling unit will be sufficiently quiet to prevent interference with sleep at any hour.</li> <li>To assure that other habitable spaces within each dwelling unit will be quiet enough so that residents may carry on all normal activities without interruption or irritation.</li> </ol> <p>To express these objectives in terms of decibels*, the bedroom area within a dwelling unit should be less than 30 dbs and the living area should be less than 50 dbs.</p>
201.2	<p><b>Sound insulation between dwelling units and common spaces or areas:</b></p> <p>Common areas or spaces within a high-rise apartment building such as a lobby, corridor, stair, elevator area, laundry room multi-purpose room, day care center, nursery, etc., become sources of noise during the time these spaces are being used. These areas or spaces should be planned to minimize audial interference with other areas, especially where the common areas or spaces are located next to or under dwelling units, the floor and walls should be constructed to reduce both air-borne and impact noises. Noise sources of mechanical equipment, elevator, plumbing systems should be isolated from the dwelling units, particularly the bedroom areas within them. In terms of decibels, there should be at least 50 dbs reduction of noise between common areas or spaces and the dwelling units.</p>
201.3	<p><b>Acoustical control of each area or space of common use:</b></p> <p>Each common area or space such as lobby, corridor, stair, elevator area, laundry room, multi-use room, day-care center, nursery, etc. should have adequate acoustical control.</p>

\* The decibel scale measures the loudness of sound, starting with one decibel which is the threshold of human audibility, and goes up to about 130 decibels which is the limit of the ear's endurance. The amount of decibels is a measure, on a logarithmic scale, of sound energy. Thus a sound at 10 decibels has 10 times as much energy as the just audible sound (1 db) and a 60 dbs sound is 10 times as strong as a 50 dbs sound. A subway train is approximately 100 dbs, a heavy traffic is 80 dbs, normal conversation is 50 dbs, and whispering is about 20 dbs.



D. U. CLUSTER - high-rise	
REF. NO.	USER-NEEDS & PROPERTY DIMENSIONAL GUIDANCE
	<b>B. VISUAL CONTROL</b>
202	CONSIDER VISUAL PRIVACY, VISUAL SUPERVISION, AND VIEW TO OUTSIDE OF COMMON AREAS OR SPACES IN RELATION TO THEIR SURROUNDINGS.
202.1	Visual privacy (visual separation): <ul style="list-style-type: none"> <li>a) Between dwelling unit and dwelling unit-- Provide visual privacy between dwelling units so that a room within one dwelling unit is not exposed to a room of another dwelling unit through a window, or a balcony of one dwelling unit is not fully exposed to the balcony of another.</li> <li>b) Between dwelling unit and common areas or spaces-- Provide visual privacy between dwelling units and common areas or spaces, e.g. a room or balcony should not be directly exposed to common areas or spaces such as elevator areas, lobbies, etc.</li> </ul>
202.2	Visual supervision (visual connection): <ul style="list-style-type: none"> <li>a) Between lobby and exterior-- The main entrance at the lobby should be readily visible all the time from within the lobby to reinforce security.</li> <li>b) No unlit, isolated common areas or spaces-- All the common spaces or areas should be well lighted when in use for safety and security reasons.</li> <li>c) Easy visibility of emergency egresses-- All the emergency egresses should be readily visible to all the residents and visitors.</li> </ul>
202.3	Identifiability: <ul style="list-style-type: none"> <li>a) Of all individual dwellings from corridor or outside-- All dwelling units should be in character with one another; however, an individual dwelling unit should be easily identifiable from the outside as well as inside a corridor.</li> <li>b) Of main entrance and lobby from outside-- The main entrance and lobby should be readily identifiable to orient visitors with ease.</li> <li>c) Of all the areas within the lobby-- All the areas within the lobby such as elevators, corridors and stairs should be easily identifiable.</li> <li>d) Of all other common spaces or areas-- All the common areas or spaces should be easily identifiable.</li> </ul>
	<b>C. AIR FRESHNESS (ODOR) CONTROL</b>
203	PROVIDE MEANS OF VENTILATION IN ALL COMMON AREAS OR SPACES, PARTICULARLY SUCH SPACES AS ENCLOSED CORRIDORS, LAUNDRY ROOM, MULTI-USE ROOMS, ETC.

D. U. CLUSTER - high-rise	
REF. NO.	USER-NEEDS & PROPERTY DIMENSIONAL GUIDANCE
203.1	All common areas or spaces: All common areas or spaces should be naturally ventilated if there is no air conditioning system.
203.2	Enclosed corridors, stairs, laundry room, etc.: Should have a forced ventilation system to insure removal of stagnant air.
	<b>D. WEATHER PROTECTION</b>
204	PROVIDE WEATHER (RAIN, SNOW, ICE, ETC.) PROTECTING AREA AT THE LOBBY AND SERVICE ENTRANCE.
204.1	There should be a weather protected area at the main entrance to the lobby as well as at the service entrance to avoid direct exposure to rain, snow, icing conditions, etc.
	<b>E. SECURITY</b>
205	PROVIDE A CONTROLLED ENTRANCE IN EACH BUILDING FOR PEOPLE AS WELL AS SERVICE TO REINFORCE SECURITY.
205.1	Consideration should be given to security of all the points of access to the building.
	<b>F. SAFETY</b>
206	ALL THE PHYSICAL ELEMENTS WITHIN THE COMMON AREAS OR SPACES WITHIN THE BUILDING SHOULD BE CAREFULLY DESIGNED TO AVOID ANY ACCIDENTS.
206.1	Safety consideration on all the physical elements within all the common areas or spaces is necessary to avoid any accidents, particularly for young children and elderly people since the common areas or spaces are used by every one at the same time.
	<b>G. ACCESSIBILITY (ABILITY TO ENTER AND EXIT)</b>
207	PROVIDE EASY ACCESS FOR RESIDENTS TO ALL THE VARIOUS TYPES OF COMMON AREAS OR SPACES AND VARIOUS MEANS OF EMERGENCY EGRESS WITHIN THE APARTMENT BUILDING.
207.1	To all common areas or spaces: The residents should have easy accessibility to all various types of common areas or spaces such as laundry room, multi-use room, day-care center, nursery, etc.
207.2	From each dwelling unit to various means of egress: Where there are means of egress in two different directions, the distance from the entry door of any dwelling unit to either external door or fire stair door should not exceed 100 ft. In the case of corridors providing a means of egress in one direction



D. U. CLUSTER - high-rise	
REF. NO.	USER-NEEDS & PROPERTY DIMENSIONAL GUIDANCE
	<p>only, the maximum distance from a dwelling unit entrance door to an exterior door or a fire stair door should not exceed 30 feet. The following text gives FHA standards and NFPA (National Fire Protection Association) standards :</p> <p>"Multistory apartments four or more stories in height, are usually served by elevators which are not considered exits, however, by fire protection authorities. Two enclosed exit stairways are usually a minimum requirement, arranged so as to be remote from each other. According to NFPA requirements, one exit must be not more than 100 ft (150 ft if sprinklered) from the entrance to an apartment, with not more than 20 ft of corridor (dead-end) travel distance being common to the travel to either exit. FHA permits a dead-end corridor to be 30 ft long."</p>
208	<p>H. CIRCULATION (PASSAGE)</p> <p>THE PASSAGE FROM ONE ACTIVITY AREA TO ANOTHER SHOULD BE DIRECT AND EASY AND CREATE THE LEAST DISTURBANCE TO THE AREAS OF OTHER ACTIVITIES ON THE WAY.</p>
208.1	<p>Separate entry for people and services:</p> <p>In a high-rise apartment situation, it is particularly important to have a separate entry for people and guests and for services in order to avoid conflict of circulation and general use of lobby and also to avoid sloppy appearance of the main entry and lobby area.</p>
208.2	<p>Direct and easy circulation between main entry of the high-rise apartment building and each dwelling unit within the building:</p> <p>There should be a direct and easy circulation pattern maybe from the main entrance to the lobby and then to the elevators or stairs and through corridors to each dwelling unit. (For the number and size of stair and elevator, the size of corridor and lobby, refer to 210; Usability of lobby, elevator, stair and corridor)</p>
208.3	<p>Easy circulation between service entry and each dwelling unit:</p> <p>The circulation between service entry and each dwelling unit should be direct and easy so that service men can easily reach each dwelling unit and also the residents taking in bulky items can easily reach their dwelling units.</p>
208.4	<p>Easy circulation between dwelling units:</p> <p>The circulation from one dwelling unit to another within a high-rise apartment building situation should be direct and easy</p>
208.5	<p>Easy circulation between dwelling unit and refuse disposal area:</p> <p>In a high-rise apartment building situation, there should be a refuse disposal chute on every floor. The chute should be easily accessible and not directly exposed to elevator area where people are going in and coming out most of the time.</p>

D. U. CLUSTER - high-rise	
REF. NO.	USER-NEEDS & PROPERTY DIMENSIONAL GUIDANCE
208.6	<p>Direct and easy circulation from each dwelling unit to all common spaces:</p> <p>All the common spaces such as nursery, daycare center, laundry room, and multi-use room should not only be easily accessible but also the circulation (passage) to these spaces from each dwelling unit should be direct and without creating disturbances on the different areas of activity on the way from each dwelling unit to these common areas: e.g. a resident with an armful of laundry material should be able to reach the laundry room without going through lobby.</p>
209	<p>I. MINIMUM FACILITIES TO BE PROVIDED WITHIN AN APARTMENT BUILDING</p> <p>WITHIN AN APARTMENT BUILDING, SEVERAL MINIMUM FACILITIES SHOULD BE PROVIDED AS THE BASIC ELEMENTS OF AMENITIES.</p>
209.1	Refuse disposal chute on every floor.
209.2	Multi-use room.
209.3	<p>Nursery and day-care center:</p> <p>CONSIDER PROVISIONS FOR EDUCATION** /NURSERY FACILITIES TO PERMIT MOTHERS TO HAVE OUTSIDE EMPLOYMENT OR TO PURSUE OTHER ACTIVITIES.</p>
209.4	<p>Hobby/work shop:</p> <p>PROVIDE SPACE FOR "WEEKEND WORK" OR HOBBIES SUCH AS A WORKSHOP OR CRAFTS AREA.</p>
209.5	<p>Bulk storage space for each dwelling unit:</p> <p>PROVIDE A SECURE STORAGE AREA FOR OUTDOOR EQUIPMENT (such as children's bicycles, automobile tires, etc.</p>
210	<p>J. USABILITY (FURNISHABILITY AND DECORABILITY)</p> <p>UNLIKE DWELLING UNITS, COMMON AREAS OR SPACES DO NOT HAVE TO BE ADAPTABLE TO MANY CHANGES. HOWEVER, THE COMMON AREAS OR SPACES SUCH AS LOBBY, CORRIDOR, LAUNDRY ROOM, MULTI-USE ROOM, DAY-CARE CENTER, NURSERY, ETC. SHOULD BE ADAPTABLE TO FURNISHABILITY AND DECORABILITY.</p>
210.1	<p>Usability of lobby:</p> <p>Lobby should have a weather protected entry, conspicuously located mail boxes with an accommodation for mailed packages, a waiting area with seats, an elevator area, etc. Also consideration should be given to decorability of the lobby. (Note: all these areas within the lobby should be planned in close conjunction with noise control, visual control, air freshness control, weather protection, security, safety, accessibility, circulation, etc. The same shall apply to the following items of usability of common areas or spaces.)</p>



# D. U. CLUSTER - high-rise

## REF. NO. USER-NEEDS & PROPERTY DIMENSIONAL GUIDANCE

FHA standards for elevator capacities are given below:  
Table 4. Total number of persons who can be served by one elevator of a given capacity and speed<sup>1</sup>

No. of stories	Total number of persons <sup>2</sup>									
	Floor-to-floor stops <sup>3</sup>					Alternate-floor stops <sup>4</sup>				
	No. of stops	1,200 lb 100 fpm	2,000 lb 100 fpm	2,000 lb 200 fpm	2,000 lb 300 fpm	No. of stops	1,200 lb 100 fpm	2,000 lb 100 fpm	2,000 lb 200 fpm	2,000 lb 300 fpm
5	5	461	618	—	—	3	—	—	—	—
6	6	391	521	—	—	3	480	715	—	—
7	7	336	465	500	—	3	—	—	—	—
8	8	313	431	465	—	4	420	595	—	—
9	9	295	408	431	465	4	—	—	—	—
10	10	281	387	408	431	4	375	550	566	—
11	11	—	—	387	419	4	375	550	566	—
12	12	—	—	368	402	5	339	495	535	—
13	13	—	—	350	387	5	339	495	535	—
14	14	—	—	335	375	5	302	434	504	545
15	15	—	—	—	363	5	302	434	504	545
16	16	—	—	—	350	6	274	397	468	521
						6	—	—	468	521
						6	—	—	444	483
						7	—	—	444	483
						7	—	—	419	468
						7	—	—	419	468
						7	—	—	400	447
						7	—	—	400	447
						8	—	—	379	428
						8	—	—	—	428
						8	—	—	—	413
						8	—	—	—	413
						9	—	—	—	397

<sup>1</sup> In using this table to determine the number of elevators required, the local authority should exclude persons occupying the bottom terminal-stop floor from its count of building occupants who will require service.  
<sup>2</sup> Where a dash, instead of a number, appears in any box it means that installation of an elevator of that capacity or speed is not recommended for the particular number of stories.  
<sup>3</sup> "Floor-to-Floor Stops" assumes a single elevator stopping at every floor.  
<sup>4</sup> "Alternate-Floor Stops" assumes two elevators, each stopping at alternate floors, except that one elevator is assumed for five-, six-, and seven-story buildings. The top number in each box relates to the alternate-stop elevator whose top terminal stop is the floor below the top floor; the bottom number in each box relates to the alternate-stop elevator which includes the top floor among its stops.

210.2

### Usability of corridor and stair:

Enclosed corridors are more expensive compared to open galleries. The width and length of corridors or open galleries are dependent on the number of people served and the number of elevators provided. Open galleries in a high-rise apartment building should have only service areas opening on them, and windows should be high enough for visual privacy of each dwelling unit. PHA (Public Health Association) specifies a maximum width of 5 ft for open galleries and does not permit bedroom windows to open on them. "Public stairway widths are usually established at a minimum of 3 ft which must be increased in width when the floor next above accommodates more than a given number of persons. Widths are based on an aggregate width of 22" for each 30 persons or fraction thereof occupying the floor next above. FHA measures the occupants on the basis of 1.75 persons per bedroom, while NFPA measures on the basis of one person for each 125 sq. ft." - TIME-SAVERS STAN.

# D. U. CLUSTER - high-rise

## REF. NO. USER-NEEDS & PROPERTY DIMENSIONAL GUIDANCE

210.3

### Usability of laundry room:

Common laundry facilities within the apartment building should be provided. One double laundry tray per 10 families and 20 sf per family for clothesline drying, and one clothes washing machine per 17 families in a space of 2 to 3 sq.ft. per family. (Remember that in item#110.7 Usability of laundry in a dwelling unit, it was required that a unit of two bedrooms or larger should be provided with in house laundry facilities.)

In the laundry room, there should be a lounge area for people to sit and read or converse while waiting for the laundry to be done. The area required for the lounge area in terms of number of persons has not been determined specifically for laundries.

210.4

### Usability of multi-use room:

New York State Division of Housing Standards states that indoor space for community use should be provided in all housing projects of 100 or more dwelling units at 9 sq.ft. per dwelling unit with 1000 sq.ft. minimum per assembly unit. Consider the possibility of providing space for:

a) small meetings; b) small game room including equipment for indoor games such as ping-pong, chess, etc.; c) reading and exhibit space; larger room for dancing or dramatic rehearsal; e) outdoor space adjacent to the multi-use room; f) kitchen for preparing food and refreshments; g) office and storage space for tenant organizations, etc. The multi-use room should be able to accommodate a wide range of changeability, furnishability, and decorability.

210.5

### Usability of nursery and day-care center:

Nursery and day-care center should be carefully planned to accommodate a wide range of furnishability, decorability, and changeability. The space should be adaptable to different types of furnishing systems which facilitates specialized functions which are related to nursery and day-care center operations. Also safety consideration is very critical in planning nursery and day-care center. An outdoor space adjacent to nursery and day-care center should be provided as a direct extension of them.

210.6

### Usability of Hobby/workshop:

Provide a space for classes in arts and crafts, or recreation in the crafts in connection with household furnishings, i.e. a space for weekend work.

210.7

### Usability of bulk storage space for each dwelling unit:

D.U. Type:	Eff.	1-BR	2-BR	3-BR	4-BR	5-BR
Cubic feet	80	80	112	144	176	210

Note: These volumes are provided inside the dwelling unit upon the assumption that at least one-third of the total storage space is already provided in the D.U.



## d.u. cluster - lowrise

A low-rise dwelling unit cluster -- or a walk-up apartment building -- is a container of dwelling units. It must be planned to meet the needs of the resident of each dwelling unit, whether the needs are those of an elderly in an efficiency apartment or those of a family with six children in a 4-BR apartment; also, it must be planned to meet the needs of the entire residents within the building as a whole. The needs can be categorized in three groups:

the privacy of each dwelling unit;

the social interaction among the residents of the building;

the accommodation of visitors as well as service men in fulfilling their activities, such as finding the apartment they are looking for or delivering articles that service men have to deliver, etc. Such activities should be able to be carried out without any unnecessary infringement upon the privacy of each dwelling unit and other activity areas within the building.

Note: The capital lettered paragraphs indicate general statement of "user-needs" and the small lettered paragraphs indicate the property dimensional guidance.

## D.U. CLUSTER - low-rise

REF. NO.	USER-NEEDS & PROPERTY DIMENSIONAL GUIDANCE
201	<p><b>A. NOISE CONTROL</b></p> <p>IN A LOW-RISE OR WALK-UP APARTMENT, THE COMMON AREAS SUCH AS STAIR LANDING, STOOP, ENTRY AREA, ETC. ARE NORMALLY NOISY MOST OF THE TIME. DWELLING UNITS CONNECTED TO THESE AREAS SHOULD BE PROVIDED WITH A GOOD SOUND INSULATION SO THAT THE PEOPLE USING THE COMMON AREAS CAN MINIMIZE AUDIAL DISTURBANCE ON THESE DWELLING UNITS.</p>
301.1	<p>Acoustical control of each area or space of common use: Each common area or space such as stair, landing stoop, entry, multi-use room, nursery, and day-care center, laundry room, etc. should have adequate acoustical control.</p>
301.2	<p>Sound insulation between dwelling units: Sound insulation between dwelling units is very critical, particularly in a dwelling unit where a baby may be crying often or in a dwelling unit where people are having a party.</p> <p>The basic objectives in designing for quiet may be expressed as follows:</p> <ol style="list-style-type: none"> <li>To assure that bedrooms in each dwelling unit will be sufficiently quiet to prevent interference with sleep at any hour</li> <li>To assure that other habitable spaces within each dwelling unit will be quiet so that residents may carry on all normal activities without interruption or irritation.</li> </ol> <p>To express these objectives in terms of decibels*, the bedroom areas within a dwelling unit should be less than 30 decibels and the living area should be less than 50 decibels of ambient noise level.</p>
301.3	<p>Sound insulation between dwelling units and common areas/spaces: Common areas or spaces within a walk-up apartment such as stair, stoop, entry, multi-use room, nursery, day-care center, laundry, etc. become sources of noise during the time these areas are used. These areas or spaces should be planned to minimize audial interference with other areas, especially where the common areas or spaces are located next to dwelling units. The walls should be constructed to minimize both air-borne and impact noise.</p> <p>* See note on decibels under dwelling unit ref. no. 101.4</p> <p>Noise sources of mechanical equipment, plumbing system, etc. should be isolated from dwelling units particularly from the bedroom areas within a dwelling unit. In terms of the decibels, there should be at least a 50 decibel reduction of noise between common areas or spaces and dwelling units.</p>



D.U. CLUSTER - low-rise	
REF. NO.	USER-NEEDS & PROPERTY DIMENSIONAL GUIDANCE
302	<u>B. VISUAL CONTROL</u> CONSIDER VISUAL PRIVACY, VISUAL SUPERVISION, AND VIEW TO OUTSIDE OF COMMON AREAS OR SPACES IN RELATION TO THEIR SURROUNDINGS.
302.1	Visual privacy (visual separation): a) Between dwelling unit and dwelling unit-- Provide visual privacy between dwelling units so that a room within one dwelling unit is not exposed to a room in another dwelling unit through a window, or a balcony of one dwelling unit is not fully exposed to the balcony of another unit. b) Between dwelling units and common areas and spaces-- Provide visual privacy between dwelling units and common areas or spaces, e.g. a room or balcony or yard should not be directly exposed to common areas or spaces such as stair, landings, entry, nursery, day-care center, multi-use room, etc.
302.2	Visual supervision (visual connection): a) No unlit, isolated common areas or spaces-- All the common areas or spaces should be well lighted when in use for safety and security reasons. b) Easily visibility of emergency egress-- In all common areas or spaces such as multi-use room, nursery and daycare center, laundry room, etc. should have emergency egresses readily visible to all the users at any time.
302.3	Identifiability: a) Of individual dwelling unit from stoop or outside-- All dwelling units should be in character with one another; however, an individual dwelling unit should be easily identifiable from outside as well as inside a stair and stoop or corridor. b) Of all the common areas or spaces-- The common areas such as stairs, entry to the stairs, laundry, etc. should be readily identifiable.
303	<u>C. AIR FRESHNESS (ODOR) CONTROL</u> PROVIDE MEANS OF VENTILATION IN ALL COMMON AREAS OR SPACES, PARTICULARLY SUCH SPACES AS LAUNDRY ROOM, ENCLOSED STAIRS, MULTI-USE ROOM, ETC.
303.1	All common areas or spaces: Should be naturally ventilated if there is no air-conditioning system.
303.2	Enclosed stairs, laundry room etc.: Should have a forced ventilation system to insure the removal of stagnant air.

D.U. CLUSTER - low-rise	
REF. NO.	USER-NEEDS & PROPERTY DIMENSIONAL GUIDANCE
304	<u>D. WEATHER PROTECTION</u> PROVIDE WEATHER(RAIN, SNOW, ICE, ETC.) PROTECTING AREA AT THE AREA OF ENTRY TO THE STAIR OF WALK-UP APARTMENT BUILDING.
304.1	There should be a weather protected area at the area of main and service entrance to avoid direct exposure to rain, draft, snow, icing conditions, etc.
305	<u>E. SECURITY</u> PROVIDE A CONTROLLED ENTRANCE TO THE BUILDING FOR PEOPLE AS WELL AS SERVICE TO ENHANCE SECURITY.
305.1	Consideration should be given to security of all points of access to the building. Particularly the dwelling units on the ground level which are susceptible to security violations.
306	<u>F. SAFETY</u> ALL THE PHYSICAL ELEMENTS WITHIN THE COMMON AREAS AND SPACES SHOULD BE CAREFULLY DESIGNED TO AVOID ACCIDENT HAZARDS.
306.1	Safety consideration on all the physical elements within all the common areas and spaces is necessary to avoid any hazards, particularly for young children and elderly people since the common area is used by every one at the same time.
307	<u>G. ACCESSIBILITY (ABILITY TO ENTER AND EXIT)</u> PROVIDE EASY ACCESS FOR RESIDENTS TO ALL THE VARIOUS TYPES OF COMMON AREAS AND SPACES AND VARIOUS MEANS OF EMERGENCY EGRESS.
307.1	To all common areas and spaces: The residents should have easy accessibility to all various types of common areas and spaces such as laundry room, multi-use room, day-care center, and nursery.
307.2	From each dwelling unit to various means of egress: Where there are means of egress in two different directions, the distance from the entry door of any dwelling unit to either external door or fire stair door should not exceed 100 ft. In the case of corridors providing a means of egress in one direction only, the maximum distance from a dwelling unit entrance door to an exterior door or a fire stair door should not exceed 30 feet. The following table shows FHA standards and NFPA standards:



## D.U. CLUSTER - low-rise

### REF. NO. USER-NEEDS & PROPERTY DIMENSIONAL GUIDANCE

#### Walk-up apartments - three story:

	FHA	
	1 exit	2 exits
Stairway } flame spread, Corridors } 0-25	Enclosed	2 hr incombustible
Travel to stair		$\frac{3}{4}$ hr <sup>1</sup>
No. of units total	12	2
Construction		2-hr fire resistance (exterior walls)
First floor construction		1 hr (incombustible) <sup>3</sup>
	NFPA	
	1 exit	2 exits (enclosed)
Stairway	Smokeproof tower or outside stair	1-hr fire resistance
Corridors	No limitation	Finish—flame spread less than 75 <sup>4</sup>
Travel to stair	No limitation	100 ft <sup>5</sup> (150 ft sprinklered)
No. of units total	2 per floor	No limitation
Construction	Fire resistant	No limitation
First floor construction	Fire resistant	No limitation

<sup>1</sup> When separated from stairway by Class C (Underwriters Laboratories) door; otherwise considered as part of stairway, requiring 2-hr fire resistance (incombustible) with Class C self-closing doors for each family unit entrance.

<sup>2</sup> Limitations of the number of units serves as an effective limitation on length of corridors or public hallways.

<sup>3</sup> Penetration of first floor construction permitted for 1 stairway where 2 exits are provided for access to basement units, laundry rooms or storage rooms only when their openings are protected by Underwriters Class C doors.

<sup>4</sup> Method of Test Surface Burning Characteristics of Building Materials (tunnel test), NFPA No. 255.

<sup>5</sup> Not over 20 ft of travel distance may be in dead-end corridor.

#### Walk-up apartments - two story:

	One exit	
	FHA	NFPA
Stairway	$\frac{3}{4}$ -hr fire resistance	Enclosed—1-hr fire resistance
Travel to stairway		20 ft
Corridors	$\frac{3}{4}$ -hr fire resistance	Fire-resistant construction
No. of units	10 units	16 families
total both floors		12 families if combustible
Maximum floor area	4,500 sq ft per floor if combustible	4,000 sq ft per floor if combustible
First floor construction over basement	2 hr	2-hr fire resistance not over 8 ft 6 in. above grade

NOTE: NFPA also permits one exit direct to street or yard at grade by outside stair, or 1-hr fire-resistant enclosed stair serving that unit only and not communicating with basement.

## D.U. CLUSTER - low-rise

### REF. NO. USER-NEEDS & PROPERTY DIMENSIONAL GUIDANCE

#### H. CIRCULATION (PASSAGE)

- 308 PASSAGE FROM ONE ACTIVITY AREA TO ANOTHER SHOULD BE DIRECT AND EASY AND CREATE THE LEAST POSSIBLE DISTURBANCE ON THE AREAS OF OTHER ACTIVITIES ON THE WAY.
- 308.1 Direct and easy circulation between the entrance of the building and each dwelling unit:  
There should be a direct and easy circulation pattern from the entrance of a walk-up apartment building to each dwelling unit within the building. The circulation pattern may be from the entrance to a little area with mail boxes and then to stair and land ing through a stoop to each dwelling unit.
- 308.2 Easy circulation between dwelling units:  
The circulation from one dwelling unit to another within or adjacent walk-up apartment buildings should be direct and easy.
- 308.3 Direct and easy circulation between each dwelling unit and refuse disposal point:  
Refuse disposal points should be located at such a place that it can be easily reached by residents as well as by refuse collector without any inconvenience and visual distraction to the residents and visitors.
- 308.4 Direct and easy circulation from each dwelling unit to all common spaces:  
All the common spaces such as nursery and day-care center, laundry room, multi-use room, etc. should not only be easily accessible but also the circulation (passage) to these spaces from each dwelling units should be direct and easy without creating a disturbance to the different areas of activities on the way from each dwellin unit to these common areas.
- #### I. MINIMUM FACILITIES TO BE PROVIDED WITHIN OR ADJACENT TO WALK-UP APARTMENT BUILDINGS
- 309 WITHIN OR CLOSE TO WALK-UP APARTMENT BUILDINGS, SEVERAL MINIMUM FACILITIES SHOULD BE PROVIDED AS THE BASIC ELEMENTS OF AMENITIES.
- 309.1 A multi-use room.
- 309.2 Nursery and day-care center:  
CONSIDER PROVISIONS FOR EDUCATIONAL/NURSERY FACILITIES TO PERMIT MOTHERS TO HAVE OUTSIDE EMPLOYMENT OR TO PURSUE OTHER ACTIVITIES.
- 309.3 Hobby/workshop:  
PROVIDE SPACE FOR "WEEKEND WORK" OR HOBBIES SUCH AS A CRAFTS AREA.
- 309.4 Bulk storagespace for each dwelling unit:  
PROVIDE A SECURE STOPAGE AREA FOR OUTDOOR EQUIPMENT -such as children's bicycles, garden tools, automobile tires, etc.



# D.U. CLUSTER - low-rise

REF. NO.	USER-NEEDS & PROPERTY DIMENSIONAL GUIDANCE
	<b>J. USABILITY (FURNISHABILITY, DECORABILITY, CHANGEABILITY)</b>
310	UNLIKE DWELLING UNITS, COMMON AREAS OR SPACES DO NOT HAVE TO BE ADAPTABLE TO MANY CHANGES; HOWEVER, THE COMMON AREAS AND SPACES SUCH AS THE LAUNDRY ROOM, MULTI-USE ROOM, DAY-CARE CENTER AND NURSERY, ETC. SHOULD BE ADAPTABLE TO FURNISHABILITY AND DECORABILITY.
310.1	<p><b>Usability of stair, stoop, landing:</b></p> <p>Stair, stoop, landing area should be carefully planned to be adaptable for moving pieces of furniture in and out and also adaptable for decorability such as wall to wall carpet or hanging an information board, etc. In many cases, the entry area of a stair in a walk-up apartment building is used to leave the baby carriages. A place for storing baby carriages should be incorporated as a part of the entry area of the stair.</p>
310.2	<p><b>Usability of laundry room:</b></p> <p>Common laundry facilities within the apartment building should be provided. One double laundry tray per 10 families and 20 sf per family for clothesline drying, and one clothes washing machine per 17 families in a space of 2 to 3 sq.ft. per family. (Remember that in item#110.7 Usability of laundry in a dwelling unit, it was required that a unit of two bedrooms or larger should be provided with in house laundry facilities.)</p> <p>In the laundry room, there should be a lounge area for people to sit and read or converse while waiting for the laundry to be done. The area required for the lounge area in terms of number of persons has not been determined specifically for laundries.</p>
310.3	<p><b>Usability of multi-use room:</b></p> <p>New York State Division of Housing Standards states that indoor space for community use should be provided in all housing projects of 100 or more dwelling units at 9 sq.ft. per dwelling unit with 1000 sq.ft. minimum per assembly unit. Consider the possibility of providing space for:</p> <p>a) small meetings; b) small game room including equipment for indoor games such as ping-pong, chess, etc.; c) reading and exhibit space; larger room for dancing or dramatic rehearsal; e) outdoor space adjacent to the multi-use room; f) kitchen for preparing food and refreshments; g) office and storage space for tenant organizations, etc. The multi-use room should be able to accommodate a wide range of changeability, furnishability, and decorability.</p>

# D.U. CLUSTER - low-rise

REF. NO.	USER-NEEDS & PROPERTY DIMENSIONAL GUIDANCE														
310.4	<p>Usability of nursery and day-care center:</p> <p>Nursery and day-care center should be carefully planned to accommodate a wide range of furnishability, decorability, and changeability. The space should be adaptable to different types of furnishing systems which facilitates specialized functions which are related to nursery and day-care center operations. Also safety consideration is very critical in planning nursery and day-care center. An outdoor space adjacent to nursery and day-care center should be provided as a direct extension of them.</p>														
310.5	<p>Usability of Hobby/workshop:</p> <p>Provide a space for classes in arts and crafts, or recreation in the crafts in connection with household furnishings, i.e. a space for weekend work.</p>														
310.6	<p>Usability of bulk storage space for each dwelling unit:</p> <table><tr><td>D.U. Type:</td><td>Eff.</td><td>1-BR</td><td>2-BR</td><td>3-BR</td><td>4-BR</td><td>5-BR</td></tr><tr><td>Cubic feet</td><td>80</td><td>80</td><td>112</td><td>144</td><td>176</td><td>210</td></tr></table> <p>Note: These volumes are provided inside the dwelling unit upon the assumption that at least one-third of the total storage space is already provided in the D.U.</p>	D.U. Type:	Eff.	1-BR	2-BR	3-BR	4-BR	5-BR	Cubic feet	80	80	112	144	176	210
D.U. Type:	Eff.	1-BR	2-BR	3-BR	4-BR	5-BR									
Cubic feet	80	80	112	144	176	210									



## site

The site is a container of dwelling units and other necessary elements such as parking areas, driveways, pedestrian paths, informal gathering areas, play-grounds, ball courts, etc. The site has to accommodate the needs of all ages at all the time, whether the user is a 2-year old child or an 82-year old elderly. Furthermore, the physical setting of the site should be such that a visitor of a resident coming to the place for the first time should be able to find the apartment of the resident he is visiting without disturbing the activities taking place within the site. Thus, the needs of the residents using various elements within the site can be categorized into three groups:

- the privacy of each individual dwelling unit and of the people involved in different activities within the site;
- the social interaction among the residents within the site as well as the neighbors of the project;
- the accommodation of visitors as well as service men in fulfilling their activities, such as finding the apartment they are looking for, or delivering articles the service men have to deliver, etc.

Note: The capital lettered paragraphs indicate the general statement of "user-needs" and the small lettered paragraphs indicate the property dimensional guidance.

## SITE

REF. NO.	USER-NEEDS & PROPERTY DIMENSIONAL GUIDANCE																								
	<b>A. NOISE CONTROL</b>																								
401	THE SOURCES OF NOISE IN A SITE OF MULTI-FAMILY HOUSING ARE THE NOISE OF CHILDREN PLAYING WITHIN THE SITE AND THE NOISE OF TRAFFIC AND OTHER ELEMENTS AROUND THE SITE. CAREFUL CONSIDERATION SHOULD BE GIVEN TO PLANNING TO AVOID EXPOSING ANY DWELLING UNITS TO NOISE SOURCES.																								
401.1	Noise control between dwelling units and play area: NOISE GENERATED FROM PLAY AREAS MUST BE TAKEN INTO CONSIDERATION WHEN LOCATING FAMILIES WITH OR WITHOUT CHILDREN ( ESPECIALLY ELDERLY) See item #101 for the maximum noise level allowed within a dwelling unit.  The noise control between dwelling units and play ground is particularly critical in that there has to be a visual connection as well as a noise barrier between the dwelling units and play ground so that mothers may supervise activities from their dwelling units.																								
401.2	Noise control between dwelling units and other active recreational areas: The activities in recreational areas for the children and teens can be located away from parents visual supervision: hence, the areas may be located away from immediate dwelling unit locality or surrounded by some means of sound attenuation such as trees. It must be understood that the distance of the buildings from the source of noise determines its volume at the point of desired control. Also the orientation of buildings to noise sources or type of structural material for the buildings can minimize the amount of surface exposure to the noise sources.																								
401.3	Noise control between dwelling units and service pick-up areas: Service pick-up areas are normally a source of irritating noise such as refuse collecting truck noise. The service pick-up areas should be conveniently located to dwelling units yet areas should be planned to create minimal audial disturbance on dwelling units																								
401.4	Noise control between dwelling units and streets: As a factor determining the intensity of traffic noise at any given point is the distance from the source of noise. The setback of buildings from the street is one way of minimizing traffic noise. The following table shows British code of practices:																								
	<table><tr><td></td><td colspan="3">Decibels at Building Line From:</td></tr><tr><td>Noise source</td><td>Curb</td><td>20-30 ft setback</td><td>150-200ft setback</td></tr><tr><td>Arterial Roads (high speed traffic all hours)</td><td>100</td><td>95</td><td>80</td></tr><tr><td>Sub-arterial Roads (traffic connecting local traffic and arterial roads)</td><td>90</td><td>85</td><td>70</td></tr><tr><td>Local Roads (shopping and residential, little through traffic, quiet at night)</td><td>70</td><td>65</td><td>50</td></tr><tr><td>Access Roads ( residential only)</td><td>40</td><td>35</td><td>20</td></tr></table>		Decibels at Building Line From:			Noise source	Curb	20-30 ft setback	150-200ft setback	Arterial Roads (high speed traffic all hours)	100	95	80	Sub-arterial Roads (traffic connecting local traffic and arterial roads)	90	85	70	Local Roads (shopping and residential, little through traffic, quiet at night)	70	65	50	Access Roads ( residential only)	40	35	20
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SITE	
REF. NO.	USER-NEEDS & PROPERTY DIMENSIONAL GUIDANCE
	<p>Also the orientation of buildings should be considered in relation to noise sources. Sounds are reflected in a manner similar to light, the amount of reflection varying with the sound absorptive qualities and the shape of the reflecting surface. Increased noise by reverberations or reflection may occur in buildings grouped around a narrow court and along lanes with tall buildings. In general, when conflict occurs between orientation for sunlight and sound reduction, freedom of noise can be obtained by spacing and baffels rather than sacrificing sunlight orientation.</p>
401.5	<p>Noise control between site and its immediate environment (other than streets):</p> <p>If the immediate environment of the site contains such elements as industry, railroad track, night life, areas of busy shopping, etc., there should be sound buffer strips with thick trees on top of careful considerations on orientation of the buildings, the type of structural materials to be employed, etc.</p>
402	<p><u>B. VISUAL CONTROL</u></p> <p>CONSIDER VISUAL PRIVACY, VISUAL SUPERVISION, AND VIEW IN RELATION TO DWELLING UNITS AND ALL THE OTHER ELEMENTS WITHIN THE SITE AND ITS IMMEDIATE SURROUNDINGS.</p>
402.1	<p>Visual privacy (visual separation):</p> <p>a) Between dwelling units and parking--</p> <p>Dwelling units on the ground level should be adequately provided with visual privacy particularly in relation to parking area where automobile headlights in the night can irritate the residents.</p> <p>b) Between dwelling units and street and pedestrian paths:</p> <p>There should be adequate visual privacy for the dwelling units on the ground level orientated to the streets and pedestrian paths within the site. Also insure that no bright lights on the streets are directly penetrable into any dwelling units.</p> <p>c) Between dwelling units and service pick-up areas--</p> <p>Provide adequate visual privacy between dwelling units and service pick-up areas.</p> <p>d) Between dwelling units and the immediate surrounding of the site--</p> <p>If the immediate surroundings of the site are frequently used as public areas, there should be adequate visual privacy for dwelling units directly oriented toward these areas.</p>
402.2	<p>Visual supervision (visual connection):</p> <p>a) Between dwelling units and play ground--</p> <p>There should be a visual connection between dwelling units and play ground so that mothers from their dwelling units can watch their young children playing out in the play area.</p>

SITE	
REF. NO.	USER-NEEDS & PROPERTY DIMENSIONAL GUIDANCE
	<p>b) Between dwelling units and pedestrian paths--</p> <p>Young children normally use pedestrian paths for bicycle-riding or roller skating. There should be a one-way visual connection from the dwelling units to the pedestrian paths so that mothers can watch their children playing while the dwelling units are exposed to people using the pedestrian paths.</p> <p>c) Between pedestrian paths and play area--</p> <p>There should be a close relationship between pedestrian paths and play areas so that adults using the paths can supervise children in the play areas.</p> <p>d) No unit isolated common facilities--</p> <p>All the common facilities such as parking areas, play areas, service pick-up areas, etc., should be properly lighted for reasons of safety and security.</p>
402.4	<p>View (visual extension):</p> <p>a) Recreational areas--</p> <p>People relaxing in passive recreational areas should be able to watch children and teenagers participating in active recreation.</p> <p>b) Between site and desirable parts of its surrounding--</p> <p>If there is any desirable part in the vicinity of the site such as open fields, lakes, rivers, etc. the buildings should be orientated toward them to take advantage of the view.</p>
403	<p><u>C. SUNLIGHT CONTROL</u></p> <p>PROVIDE AMPLE SUNLIGHT FOR ACTIVE AND PASSIVE RECREATIONAL AREA: HOWEVER, TREES SHOULD ALSO BE PROVIDED AS A MEANS OF SUN SHADE DURING HOT SUMMER DAYS.</p>
403.1	<p>Common facilities such as play ground, basketball court, swimming pool, informal gathering places, etc. should have as much exposure to sun as possible.</p>
404	<p><u>D. WEATHER CONTROL</u></p> <p>PROVIDE WEATHER (RAIN, SNOW, ICE, ETC.) PROTECTION FOR THE FREQUENTLY USED FACILITIES SUCH AS A PUBLIC TRANSIT STOP, A WALK WAY CONNECTING BUILDINGS, ETC. ALSO WHEN ORIENTATING BUILDINGS, THE PREVAILING WIND DIRECTION OF SUMMER AND WINTER WINDS SHOULD BE CAREFULLY CONSIDERED.</p>
404.1	<p>Constantly used pedestrian paths:</p> <p>Constantly used pedestrian paths connecting buildings should have a means of weather protection.</p>
404.2	<p>Orientation of buildings towards prevailing winds:</p> <p>Apartment buildings should be oriented towards the prevailing winds of summer and against the prevailing winter wind.</p>



SITE	
REF. NO.	USER-NEEDS & PROPERTY DIMENSIONAL GUIDANCE
	<b>E. SECURITY</b>
405	ALL THE COMMON FACILITIES SUCH AS PARKING, INFORMAL GATHERING AREAS, PLAY AREAS, ETC. SHOULD BE PROPERLY LIGHTED DURING THE DARK HOURS TO ENHANCE SECURITY AND SAFETY.
405.1	Security is one of the concerns in a housing project and this factor ought to be incorporated in the planning of a project; however, security considerations should not diminish the choices and possibilities such amenities as a convenient and pleasant informal gathering area for the residents, and play areas for children of different age groups.
	<b>F. SAFETY</b>
406	ALL THE PHYSICAL ELEMENTS IN THE SITE SUCH AS DRIVEWAYS, PARKING AREAS, PLAY AREAS, PEDESTRIAN PATHS, INFORMAL GATHERING AREAS, ETC. SHOULD BE CAREFULLY DESIGNED TO AVOID ANY ACCIDENTS.
406.1	Safety consideration on all physical elements within all the common facilities is very important to avoid any accidents, particularly for young children and elderly people.
	<b>G. ACCESSIBILITY (ABILITY TO ENTER AND EXIT)</b>
407	PROVIDE EASY ACCESS FOR RESIDENTS TO ALL THE VARIOUS COMMON FACILITIES WITHIN THE SITE. ALSO EASY ACCESSIBILITY SHOULD BE CONSIDERED FOR EMERGENCY VEHICLES TO REACH ANY POINT WITHIN THE SITE.
407.1	Easy access from every dwelling unit to all the common facilities within the site: The residents should have easy access to all the various common facilities such as parking areas, recreational areas, pedestrian networks, informal gathering places, etc.
407.2	Easy access to and from the site: The easy accessibility of the site from and to a public street or road is very important.
407.3	Easy access to various facilities around the site: The various facilities around the site such as a public transportation stop, grocery stores, drug stores, community center, library, etc. should be easily accessible.  If the site is in an urban context, there should be no more than 1500 ft from the dwelling units to a public transit stop which provides access to city wide facilities and places of employment. Grocery stores or drug stores should be located no more than 600 ft from the dwelling units and barber shop, beauty parlor, hardware store, etc. should be located no more than 900 ft from the dwelling units.

SITE	
REF. NO.	USER-NEEDS & PROPERTY DIMENSIONAL GUIDANCE
407.4	Ready access for emergency vehicles: Emergency vehicles such as ambulances and fire equipment should be able to have direct access to every dwelling unit.
407.5	Easy access for service vehicles: Service vehicles such as moving trucks, delivery trucks, fuel delivery trucks, refuse collecting trucks, snow removal equipment, etc.
	<b>H. CIRCULATION (PASSAGE)</b>
408	THE CIRCULATION NETWORK FOR PEDESTRIANS AND VEHICLES SHOULD BE SEPARATED. THE PEDESTRIAN NETWORK SHOULD HAVE EASY CONNECTION TO ALL DWELLING UNITS AND COMMON FACILITIES WITHIN THE SITE. THE VEHICULAR CIRCULATION NETWORK SHOULD HAVE EASY CONNECTION TO PEDESTRIAN PATHS CONNECTING THE DWELLING UNITS AND COMMON FACILITIES.
408.1	Separation of pedestrian and vehicular movement: There should be a separation between pedestrian movement and vehicular movement (driveways, parking areas, etc.). Also children's play areas should be away from any kind of vehicular movement to insure that there be no conflict between the two areas.
408.2	Connection between pedestrian and vehicular movement: Where pedestrian circulation networks and vehicular networks meet, careful consideration should be given to avoid any conflict.
408.3	Direct and easy circulation between dwelling units and all the common facilities: There should be a direct and easy circulation between every dwelling unit and common facilities such as parking, play areas, informal gathering areas, etc.
408.4	Direct and easy circulation between dwelling units and the facilities in the vicinity of the site: The facilities in the vicinity of the site should be easy to get to either by car or on foot.
	<b>I. MINIMUM FACILITIES TO BE PROVIDED WITHIN THE SITE</b>
409	WITHIN THE SITE OF MULTI-FAMILY HOUSING, SEVERAL COMMON FACILITIES SHOULD BE PROVIDED AS THE BASIC ELEMENTS OF AMENITY.
409.1	Play ground: CHILDREN'S ACTIVITY AREAS SHOULD BE CAREFULLY DESIGNATED AS SUCH BUT SHOULD BE ADJACENT TO PUBLIC AREAS.
409.2	Treed area: A REASONABLE AMOUNT OF THE PLAY AREA FOR YOUNG CHILDREN MUST INCLUDE



SITE	
REF. NO.	USER-NEEDS & PROPERTY DIMENSIONAL GUIDANCE
	<p>MANY SMALL PLACES AND PLAY OPTIONS CONSISTING OF A VARIETY OF NATURAL ELEMENTS SUCH AS TREES, BARE EARTH, FLOWERS, ETC.</p> <p>PROVIDE FOR ACCESS TO NATURAL OPEN SPACE FOR SOLITUDE, NATURE OBSERVATION BEING ALONE, PLAY AREAS FOR BUILDING AND CONTROLLING OWN ENVIRONMENT, EXPERIMENTATION, AND PLAYING WITH PET ANIMALS.</p>
409.3	<p>Hard surface court for basketball, handball, etc.: A hard surface court should be provided for older children to play basketball, handball, and other types of ball games.</p>
409.4	<p>Swimming pool: If there is no community swimming pool nearby, a swimming pool should be provided for the residents within the site.</p>
409.5	<p>Parking: There should be at least one parking space for each dwelling unit</p>
409.6	<p>Informal gathering place: There should be an informal gathering place with trees, flowers, benches, etc., preferably nearby children's play areas so that there will be interaction (visual, social) between all age groups. The informal gathering area could be so designed that when it is not being used during the cold season, it may be converted to an ice skating area.</p>
409.7	<p>Car washing and repairs area: Car washing and repairing are taking place in every housing project, but not many housing projects provide an accommodation for them. There should be an area where residents can wash their cars with hot and cold water and also a safe place for repairing cars.</p>
	<b>J. USABILITY (FURNISHABILITY, DECORABILITY)</b>
410	<p>ALL THE COMMON FACILITIES SUCH AS PLAY AREAS, DRIVEWAYS, PEDESTRIAN WALKWAYS, INFORMAL GATHERING AREAS, PARKING AREAS, ETC. SHOULD BE ADAPTABLE TO ACCOMMODATE FURNISHABILITY AND DECORABILITY.</p>
410.1	<p>Parking and driveways and service roads: Walking distance to dwelling entrance from street or driveway or parking area should be maximum 250 ft (FHA), but 100 ft is desirable. No parking should be allowed directly adjacent to lanes which carry through or fast moving traffic. Parking should not be allowed where it may interfere with safe site distances, either at intersections or on curves (25 ft from intersections). Also parking areas should not be located near play areas or interfere with pedestrian circulation. All the parking areas should be furnished with adequate lighting and a screening device such as shrubbery.</p> <p>Driveways and service roads should not interfere with play areas or pedestrian circulation systems. The design factors for driveways and roads should be (a) adequate radii of curb returns,</p>

# SITE

REF. NO.

USER-NEEDS & PROPERTY DIMENSIONAL GUIDANCE

(b) adequate curb cuts on the basis of 18 ft wide residential driveways, (c) adequate distance of driveway from street intersection (driveway or service roads must be at least 25 ft away from street intersection). Driveways and service roads should also be furnished with lights -minimum of 15 ft high from ground (20 ft recommended) and 120 to 160 ft spacing.

The following table provides some dimensional guidance for certain elements of the circulation system:

Pavement width	
Condition	Width in feet
Lane for moving traffic	10
Lane for parallel parking	8
One-way residential service streets without parking -minimum curb to curb	18
One-way residential service street with parking permitted on one side	20
Two-way residential service streets -no parking	26
Two-way residential service streets - with parking	36
Dead-end streets (600 ft maximum) -provide cul-de-sac wide enough for two lanes of traffic unobstructed by parking and turning diameter of 80 ft. (If these conditions cannot be met, maximum length for cul-de-sac should not exceed 350 feet) For shorter dead-ends provide 50 ft. diameter at end, free of parked cars, for turning. (If parking is anticipated, add 20 ft to diameter.)	

Note: Driveways and service roads within the site should be planned in close conjunction with noise control, visual control, security, safety, accessibility, circulation, etc. The same note is applicable to and will not be repeated in all the following items of usability of other common facilities within the site.

410.2

Usability of play ground:

INTERFERENCE WITH OLDER PLAY GROUPS HAS TO BE AVOIDED: HOWEVER, AWARENESS OF OLDER PLAY GROUP ACTIVITIES SHOULD BE ENCOURAGED.

Play ground should be located where mothers can have a visual connection from their dwelling units. The play ground should be provided with equipment which permits a wide range of normal play activities. Consider the design of environments as objects which provoke the imaginative use generated by children:

- a small area for preschool children
- apparatus areas for younger and older children
- open space for informal play
- drinking fountains
- access to toilet facilities on the ground level

The play ground can be incorporated with nursery and day-care center.



SITE	
REF. NO.	USER-NEEDS & PROPERTY DIMENSIONAL GUIDANCE
410.3	<p>Usability of hard surfaced area:</p> <p>There should be a hard surfaced area where older children can play basketball, handball, volleyball, etc. This area should be away from young children's play area to avoid any conflict which may result in hurting little children.</p>
410.4	<p>Usability of treed area and informal gathering area:</p> <p>There should be a treed area within the site of multi-family housing project for residents to relax. An informal gathering area could be connected or incorporated to treed area for residents to get together informally, conversing, watching children playing, residents strolling by, etc. The open informal area for gathering should be planned in such a way that it could be turned into a ice skating area during the cold season. Also proper planning should be considered for outdoor furniture such as lamps benches, tables, places for flowers, etc.</p>
410.5	<p>Usability of pedestrian circulation network:</p> <p>ESSENTIAL CIRCULATION AREAS SHOULD BE RESPONSIVE TO THE FULL RANGE OF PEDESTRIAN AMBULATORY CONDITIONS (WALKING, BICYCLING, WHEEL CHAIR, ETC.)</p> <p>Pedestrian circulation network should not only serve as a path from dwelling unit to various common facilities but also serve as a place where the residents can stroll, mothers can push baby carriages, children can ride bicycles or roller skate, and handicapped people may be able to use wheel chairs. Because of such a wide range of use, the pedestrian circulation network should be very carefully planned to accommodate all types of activities on the network itself as well as the areas intimately connected to the network such as, play areas, dwelling units, driveways, parking areas, etc.</p>
410.6	<p>Usability of car washing and repair area:</p> <p>PROVIDE AN AREA WHERE TEENAGERS MAY WORK ON CARS, ENGINES, WASH CARS ETC.</p> <p>Provide an area where the residents can wash their cars with hot and cold water. Such an area should have a good local drainage system. An area should also be provided where residents can repair their cars: if it is economically feasible, a covered area with a minimal tool shelter may be highly desirable.</p>



THE HISTORY OF THE  
CITY OF BOSTON

FROM THE FIRST SETTLEMENT  
TO THE PRESENT TIME

BY  
JOSEPH NEALE  
OF BOSTON

IN TWO VOLUMES.  
VOL. I.

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# 4. A diagrammatic method of relating user needs to physical form

## 4.1 INTRODUCTION

Of critical importance in generating the design of housing is the translation method employed from 'idea' to physical form. While the diagrammatic methods described in *Urban Designs, Housing and User Needs* stressed the site planning aspects of their translation, this study concentrates on the interior relationships of the dwelling unit itself as well as building and site related problems. An effort was made to work from the 'inside out', to determine physical form response to performance oriented criteria. To first establish a relationship between criteria at the unit scale and to expand in successive stages through the unit to unit relationship to the final building form fitted to the site.

## 4.2 METHOD

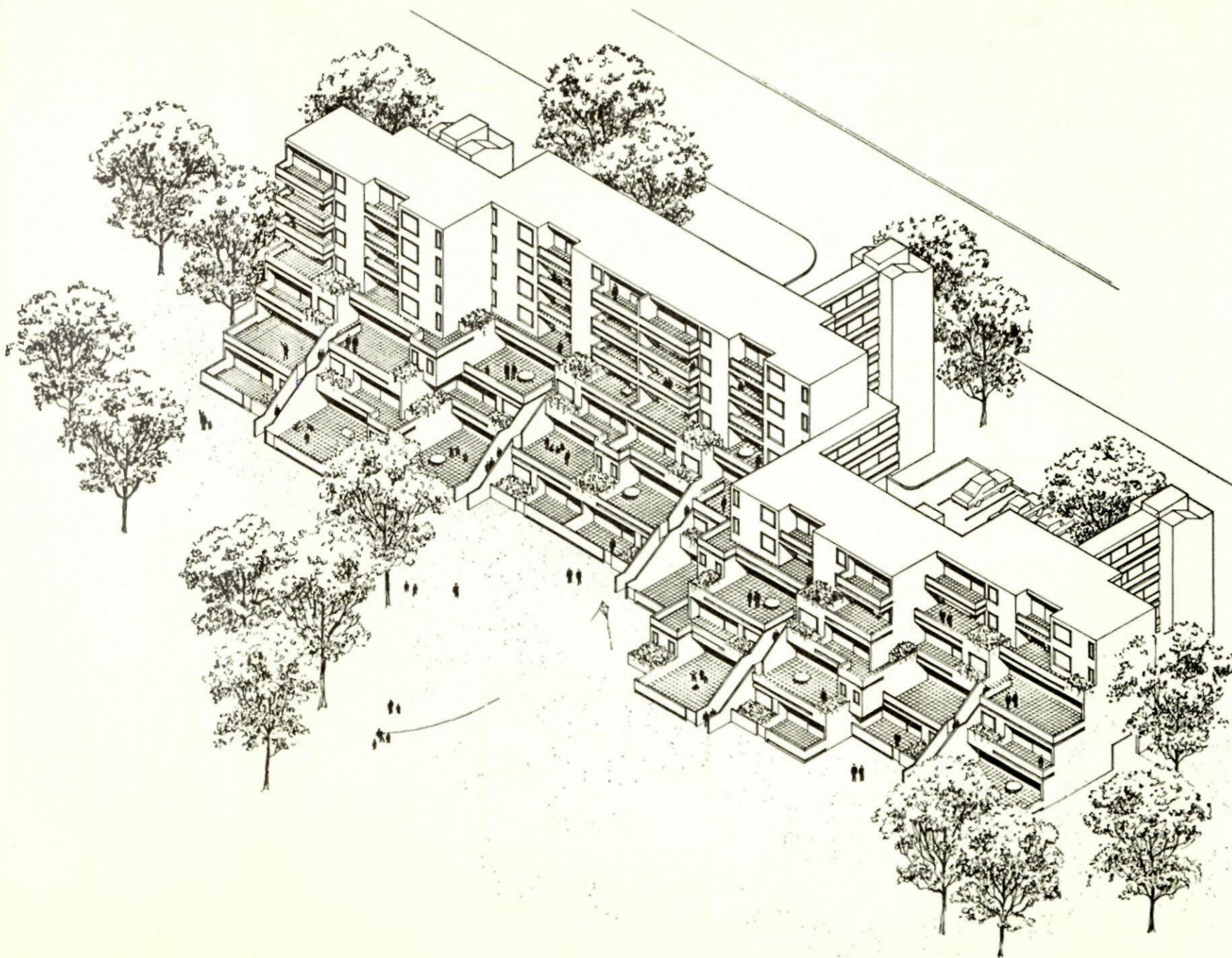
Three proto-typical housing designs developed by students are analysed in terms of their user need applicability. Diagrams are used to clarify and expand the meaning of verbal statements as a sort of 'middle phase' between words and design. Comments are made expressing the degree of satisfaction of a specific need as it is expressed in the physical form of the actual design. The following implications for designers are apparent in the method:

- 1) By coupling diagrammatic analysis with user need statements, a further clarification of what is intended is made clearer to the designer. Both the verbal and symbolic meaning of the criteria is developed, hopefully explaining concepts beyond the capability of words.
- 2) Diagrams conceptualize the meaning of word statements as well as the underlying abstraction of physical design. They can be used both during the design phase and as an evaluation of the final product. They have been so used during the process of this study.
- 3) Final designs are often more complex and richer in meaning than the original implications of the user need statement. They often suggest new interpretations and refined meaning to user need criteria, forming an essential 'feed-back' of information to constantly improving standards.



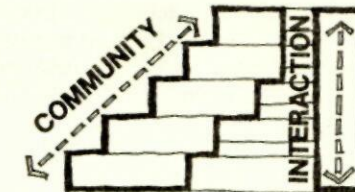
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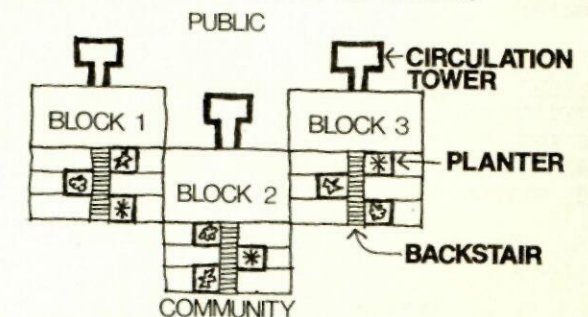
## Prototype one

THE ORGANIZATION OF DWELLING UNITS MUST ALLOW FOR CLOSE-KNIT COMMUNITIES BASED ON MUTUAL ASSISTANCE, I.E. DEPENDABILITY IN EMERGENCIES, DAILY SOCIAL ENCOUNTERS.



The terraced family-oriented units promote a sense of informal community both visually and physically and still provide necessary privacy. The elderly-oriented one bedroom and efficiency units which stack above them are also involved in this community visually in that they overlook it. At the same time, their location buffers them from the noise etc. generated by children below. Furthermore, chance interaction which promotes community familiarity and dependence is provided in the circulation towers which feed each building block.

- ALL DWELLING UNITS SHOULD BE IN CHARACTER WITH ONE ANOTHER. HOWEVER, CERTAIN ELEMENTS WHICH ARE DETERMINED BY THE OCCUPANT SHOULD DISTINGUISH AN INDIVIDUAL UNIT FROM OTHERS.



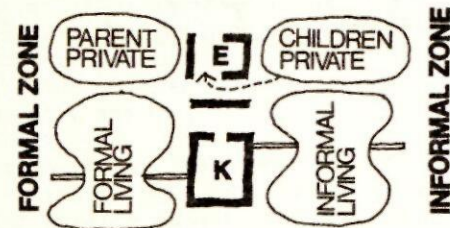
Each building block is defined individually by its feeder circulation tower on the public side, its informal "backstair" system on the community side, and by the staggered configuration of the building system itself. Dwelling units within each block are provided with individual planter boxes in which occupants can distinguish themselves in choice of landscaping.



MAKE EACH DWELLING UNIT ADAPTABLE TO ACCOMMODATE CHANGES IN EITHER FAMILY SIZE, INCOME, LEISURE TIME OR TO MEET OTHER VARIABLE SPACE REQUIREMENTS.

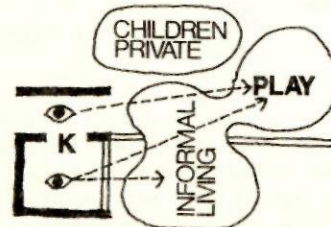
Additional bedrooms may be added at linkage points between units. Variations are made in the informal zones of each unit to accommodate different bedroom loads (see "Variation" diagram).

MAXIMIZE APARTMENT FURNISHIBILITY AND LIVABILITY OPTIONS.

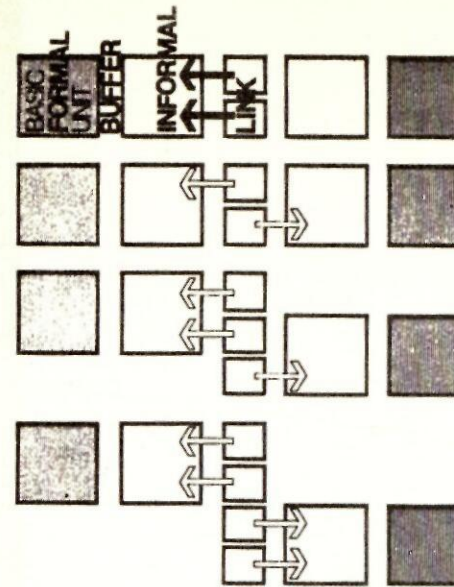


A clearly bi-zonal plan in which formal-quiet and informal-noisy family living options are provided both indoors and outdoors and are buffered by the kitchen. An entry lock is also provided and acts as a buffer between the parent's private domain and the children's private domain. This arrangement allows children direct accessibility from outside so as not to interfere with the adult's private and family domains.

PROVIDE AN IDENTIFIABLE INDOOR PLAY AREA NOT INTERFERING WITH OTHER ACTIVITIES IN THE UNIT BUT EASILY SUPERVISABLE BY MOTHER WHILE SHE IS CARRYING OUT MEAL PREPARATION, WASHING, IRONING, WRITING, TELEPHONING, ETC..



A clearly defined play area is provided directly off the children's bedrooms and is integrated with the informal family activity zone (both indoor and outdoor) of the unit. The kitchen serves as a control lock for supervision.



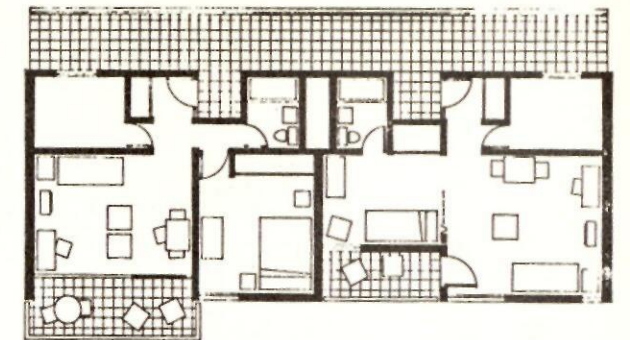
## 2.4 VARIATION

BASIC UNIT WITH BEDROOM COMBINATIONS

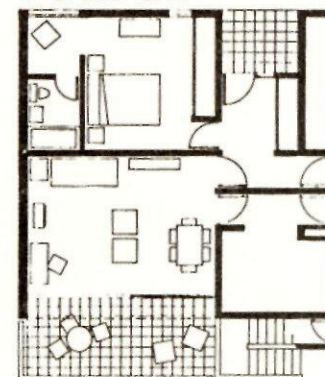
ONE BEDROOM

## PLANS

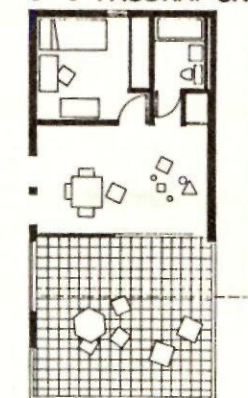
EFFICIENCY



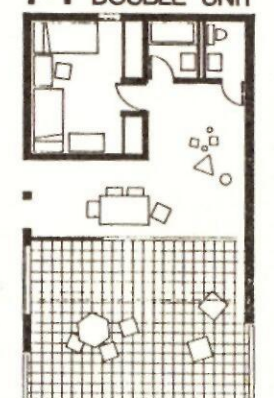
## 1 BASIC UNIT



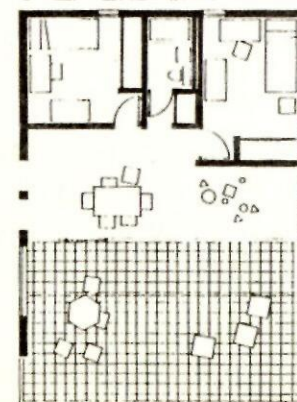
## 1+1 PASSWAY UNIT



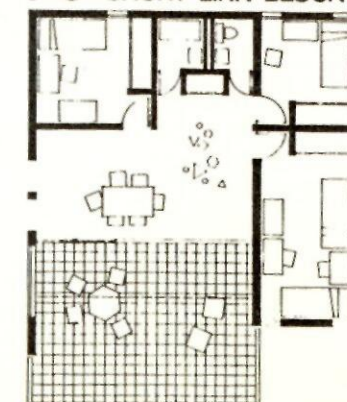
## 1+1 DOUBLE UNIT



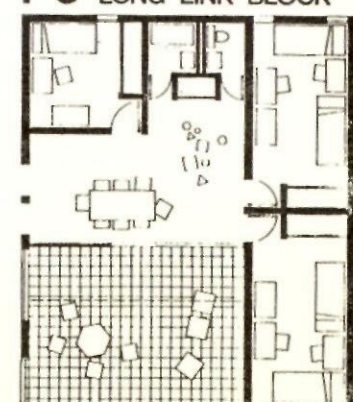
## 1+2 END UNIT



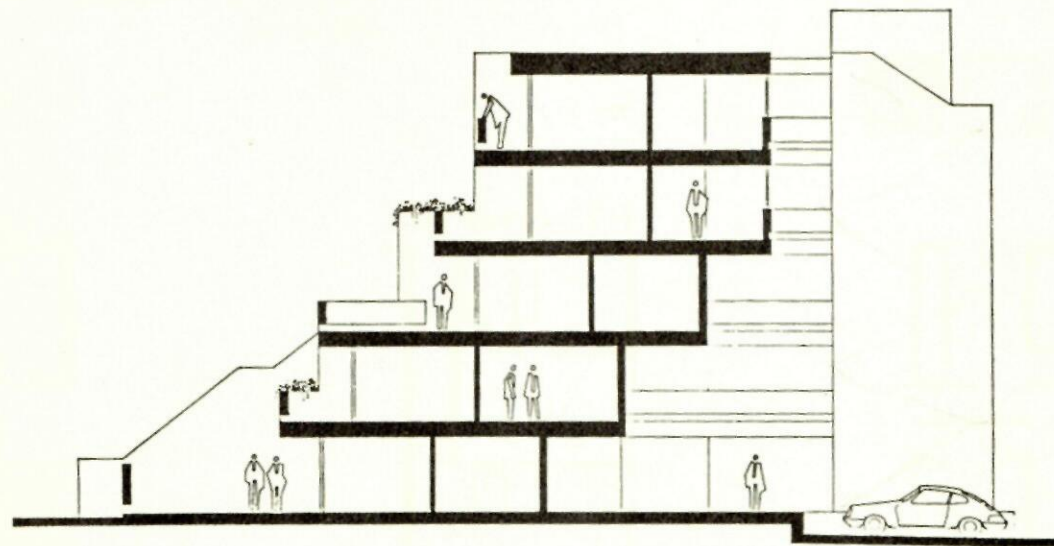
## 1+3 SHORT LINK BLOCK



## 1+3 LONG LINK BLOCK

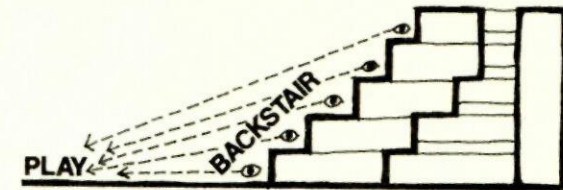






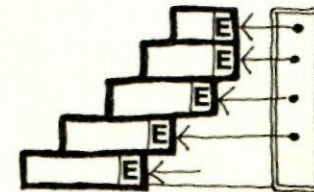
BUILDING SECTION

A CLOSE AND INFORMAL ACCESS FROM THE DWELLING UNIT TO OUTSIDE ACTIVITY SHOULD BE PROVIDED FOR CHILDREN.



The building's terraced configuration and informal "backstair" system provides both visual control and physical accessibility from individual units to the children's play areas.

PROVIDE SEPARATE, CLEARLY DEFINED, WEATHER PROTECTED ENTRANCE TO EVERY DWELLING UNIT WHEREVER POSSIBLE.



Each terraced unit has an individual covered entry hall feeding off circulation towers. Stacked units are fed floor by floor off covered corridors. Moreover, every unit has its own recessed exterior entry lock which clearly defines its entrance and also its sense of individuality.

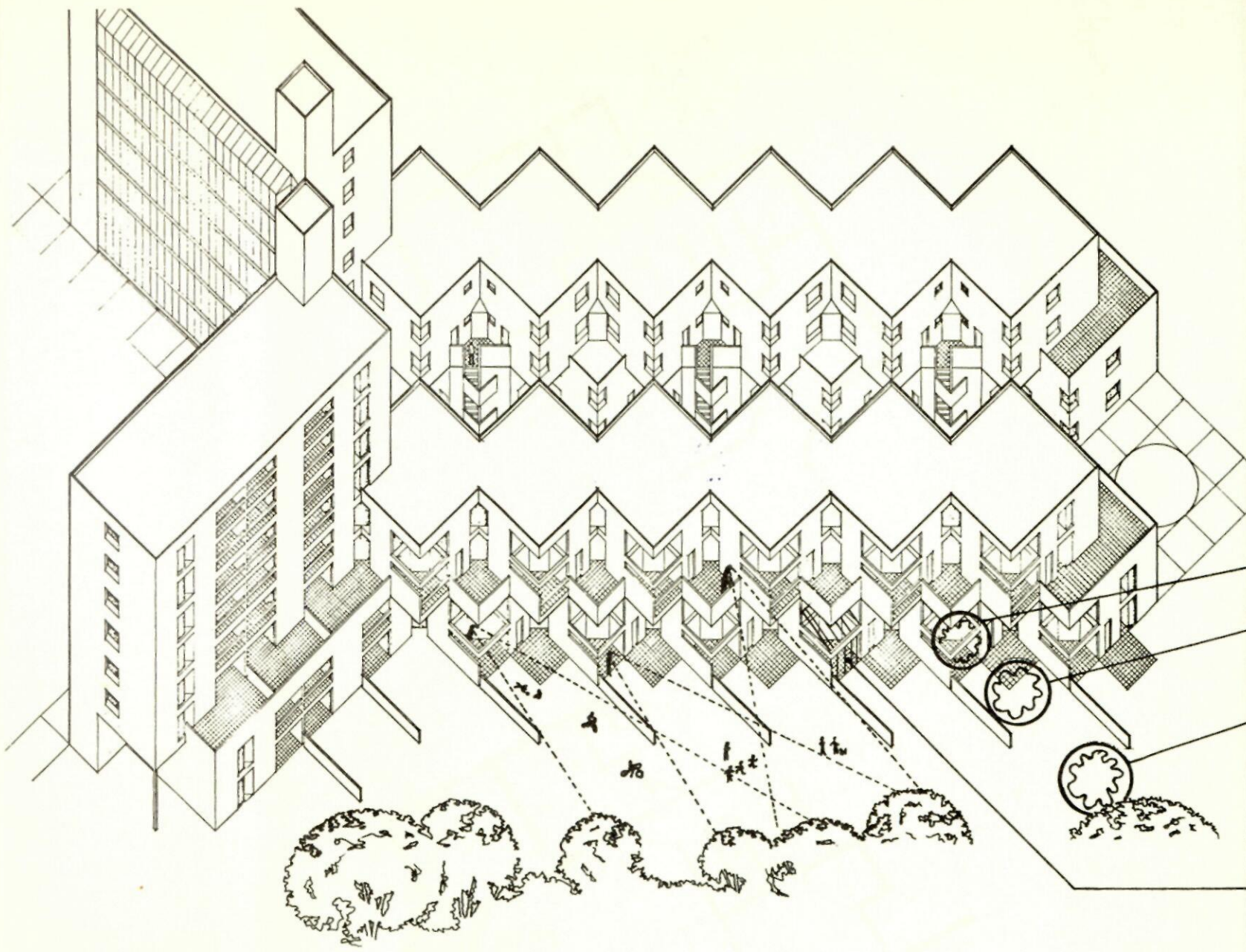


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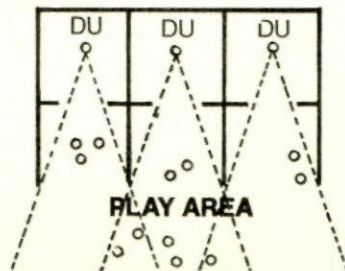
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#### ANALYSIS

- 1 In furnishing the dwelling unit grouping with these user-needs for play, this scheme encompasses the additional objectives of easy supervision of the outdoor play area adjacent to the dwelling unit, and a view of the larger contiguous play area from many of the adjacent units.

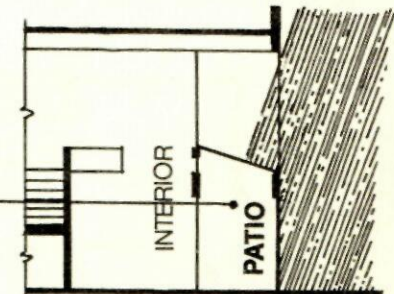
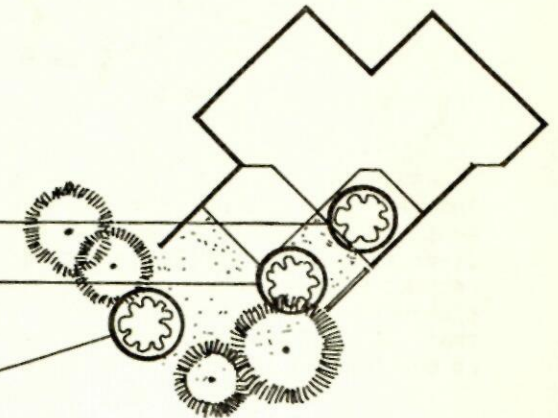


## Prototype two

A REASONABLE AMOUNT OF PLAY AREA MUST INCLUDE MANY SMALL PLACES AND PLAY OPTIONS CONSISTING OF A VARIETY OF NATURAL ELEMENTS, I.E., BARE EARTH, TREES, AND FLOWERS.



play area

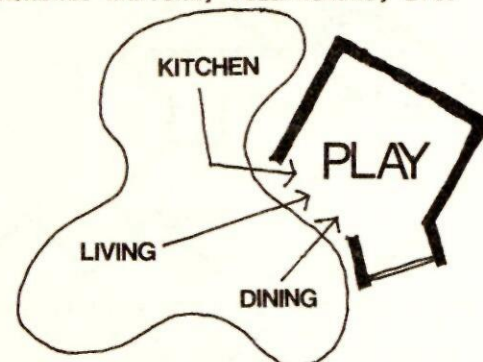


- 2 This kind of informal supervision, when reinforced by the architecture, may contribute to a sense of communal responsibility and interaction.

Also note that for the small areas adjacent to the dwelling unit, there is the opportunity to provide weather protection which would allow for use of the space during a greater portion of the year.

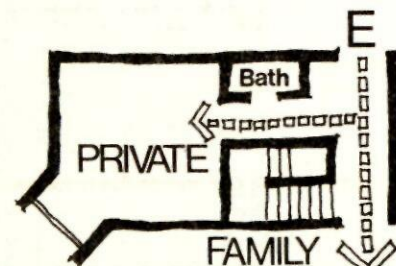


PROVIDE AN IDENTIFIABLE INDOOR PLAY AREA NOT INTERFERING WITH OTHER ACTIVITIES IN THE UNIT BUT EASILY SUPERVISED BY THE MOTHER WHILE SHE IS CARRYING OUT MEAL PREPARATION, WASHING, IRONING, WRITING, TELEPHONING, ETC.

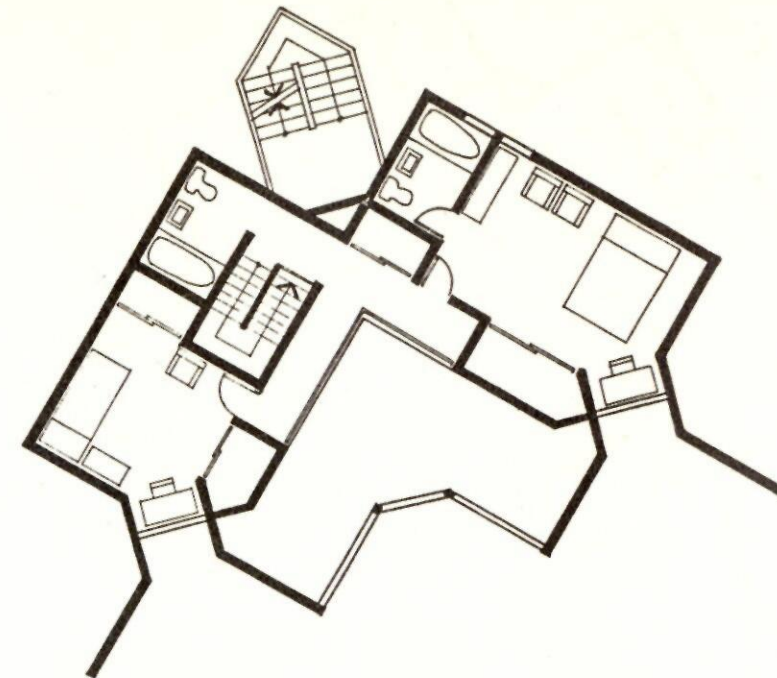


Although the play space provided here may be insufficient in size for a three bedroom apartment, it is clearly defined and separate from other activities. At another time, such a space becomes easily adapted to other uses such as a workshop, den, or dining room. It is evident that options for livability as the family make-up changes are inherent in the design.

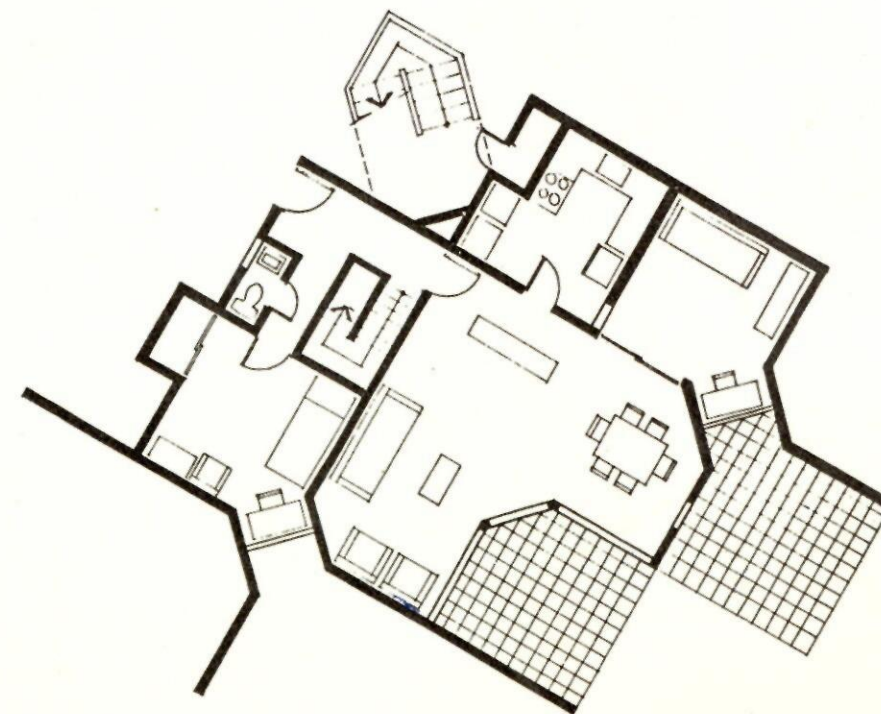
PROVIDE A PRIVATE SPACE FOR EACH ADOLESCENT WHICH IS ISOLATED FROM OTHER ACTIVITIES IN THE DWELLING UNIT AND HAS ADEQUATE SOUND INSULATION.



An adolescent's bedroom stack is provided in one corner of the unit configuration. Both spaces are well isolated from other parts of the dwelling unit and at the same time are easily accessible from the dwelling unit entry without traversing an intermediate room. The bedroom on the first floor has the most direct access to the entry and is ideal for teenagers.

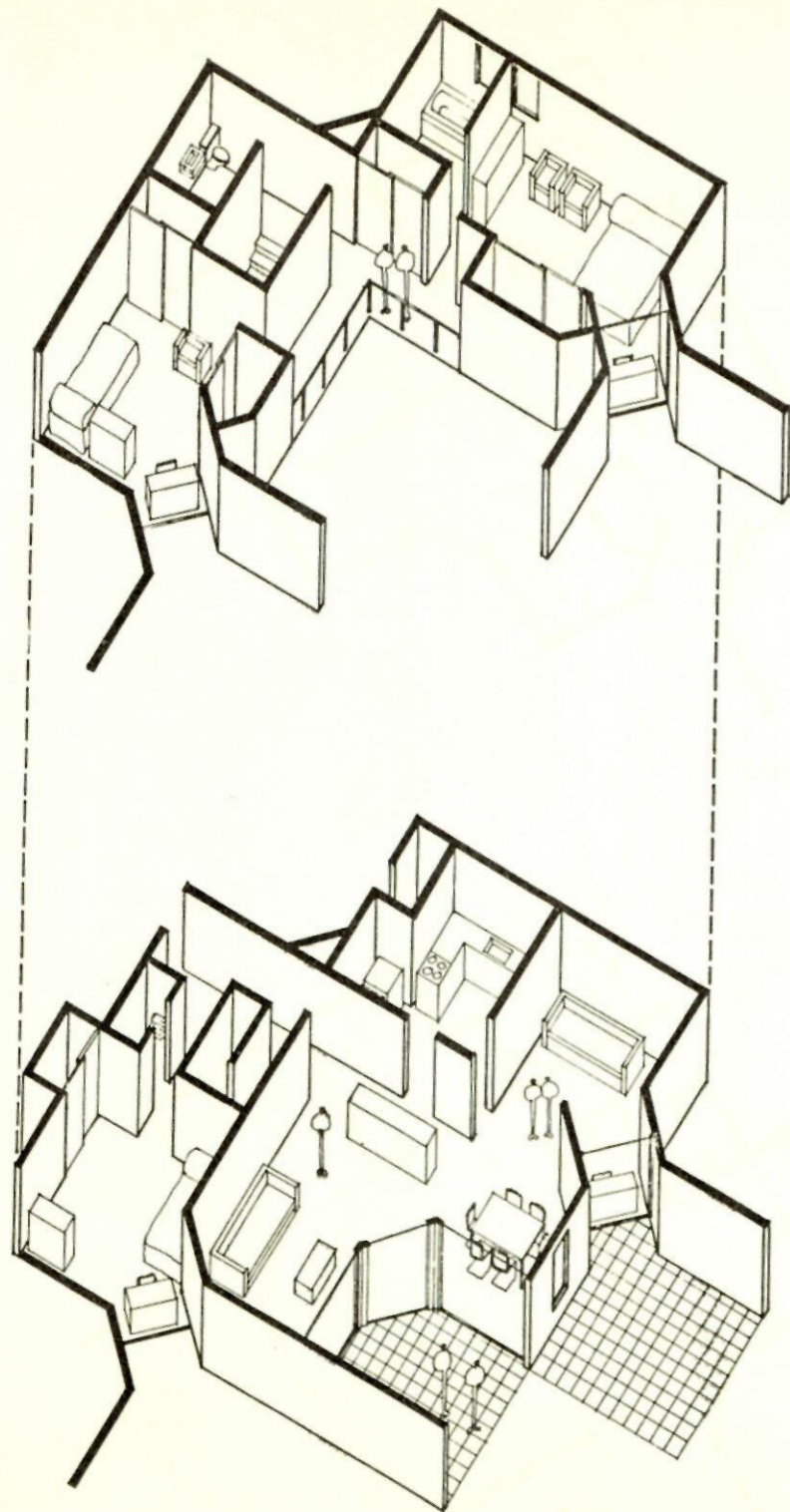


Second Floor

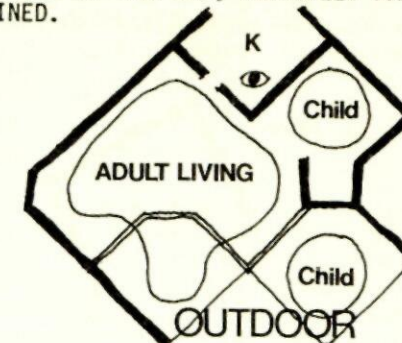


First Floor



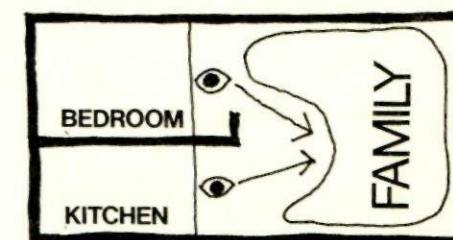


PROVIDE PRIVATE OUTDOOR SPACE EASILY ACCESSIBLE FROM THE DWELLING UNIT, SUNLIT FOR MORE THAN 30% OF THE DAY, PARTIALLY PAVED, AND WELL DRAINED.



This scheme clearly employs the outdoor area as a direct extension of the living spaces. However, although the outdoor area is broken into two parts, conceivably for adults and children, the playroom does not have direct access to it. Moreover, it is completely isolated from the kitchen which makes mother's supervision over children's outdoor activities difficult.

PROVIDE AN AREA FOR FAMILY INTERACTION AND IDENTITY.



The basic configuration of the unit is an "L shape" of stacked bedrooms and service spaces wrapped around a two story family living space. This arrangement orients all rooms, both on the first floor and on the second floor, into the family interaction area. Although this concept poses some acoustical problems, it is an interesting attempt at focusing an apartment unit on a family center.



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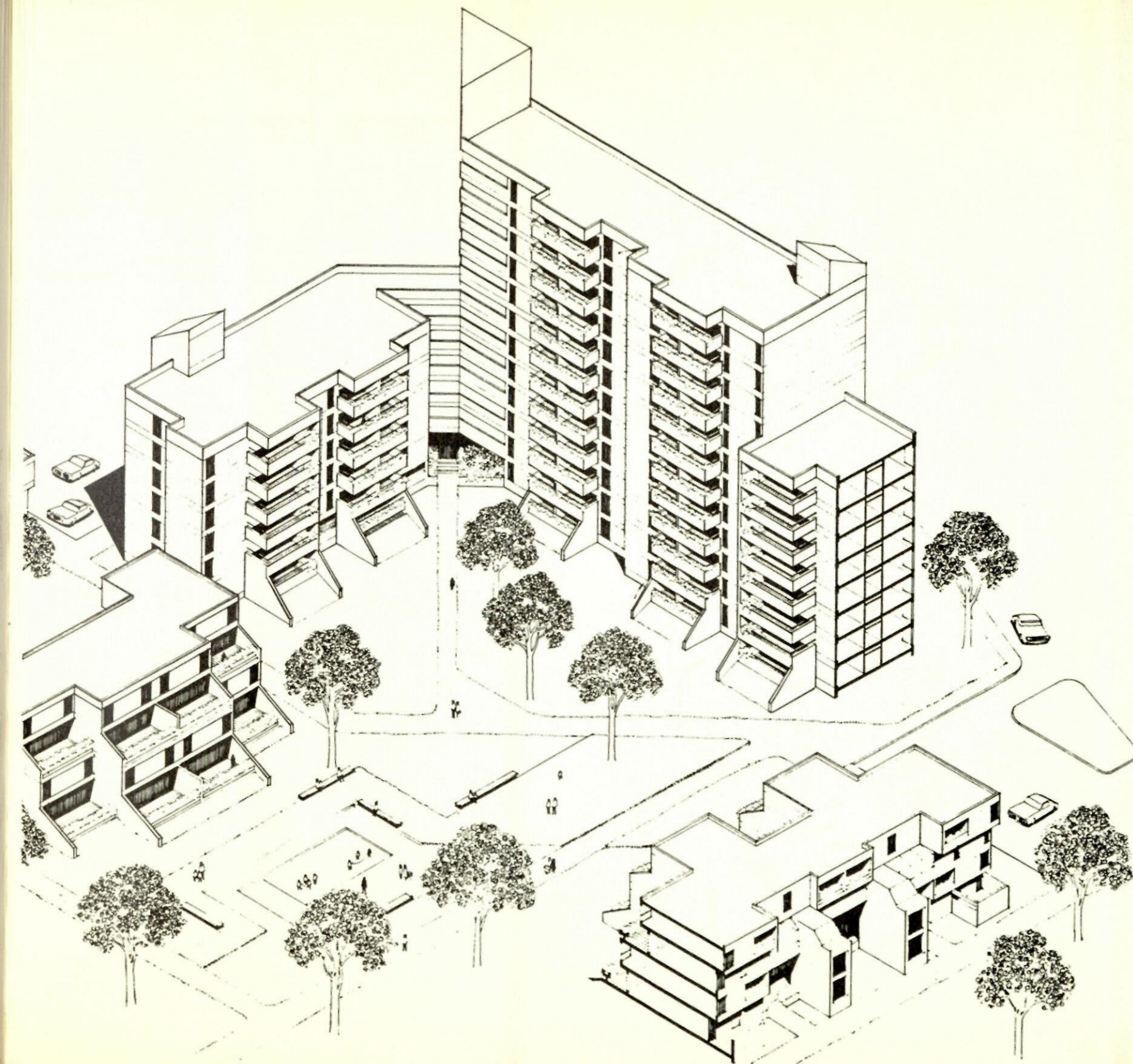


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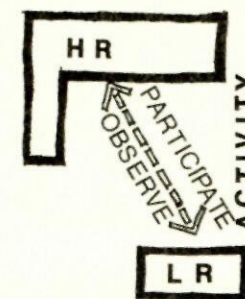




## Prototype three

### SITE: OCCUPANTS

This design recognizes that the requirements of families and individuals are of a nature that would make total dwelling mix into the development difficult to obtain. The needs of singles, elderly, families with very small children, or families with children of different ages are different, and therefore require a different type of environment. The special problems of vehicular access, security, and imposition of life styles from one group onto another were best solved by different building types. Accordingly, families with children of mixed ages were placed in low rise, low density units (with greater ground contact) around the site while elderly, singles, and families with small children (who may not desire a duplex unit) were placed in a high rise structure. The option, of course, is available for a different choice if the occupant so desires.

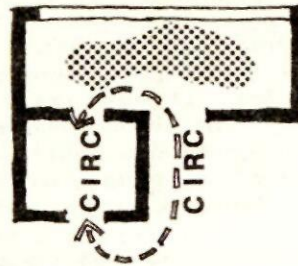


### SITE: INTERACTION

Close contact is, however, maintained on the site. The locations of the building types contribute to an awareness of each other through physical, visual, and acoustical contact. The individual's associations with the community are generally voluntary, but provisions for these to occur have been facilitated. On site community-oriented activities with participation across age groups are seen as one common mechanism for interaction. Observation of each individual's particular type of site-oriented leisure time activity, as well as an overlapping pedestrian system, are others.

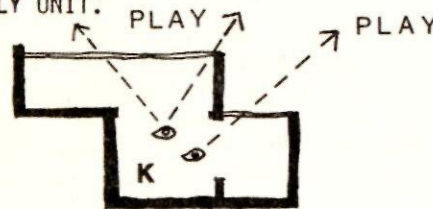


MAXIMIZE APARTMENT FURNISHABILITY AND LIVABILITY OPTIONS.



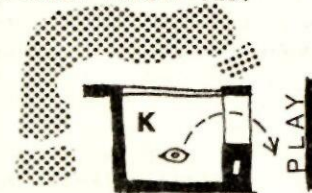
Large uninterrupted wall areas and spaces allow a variety of furniture arrangements and facilitate changes in use in time. A circulation core eliminates cross circulation in living spaces, further adding to flexibility.

MAKE PROVISIONS FOR THE MOTHER TO BE ABLE TO WATCH THE ACTIVITIES OF THE CHILDREN OUTSIDE THE FAMILY UNIT.

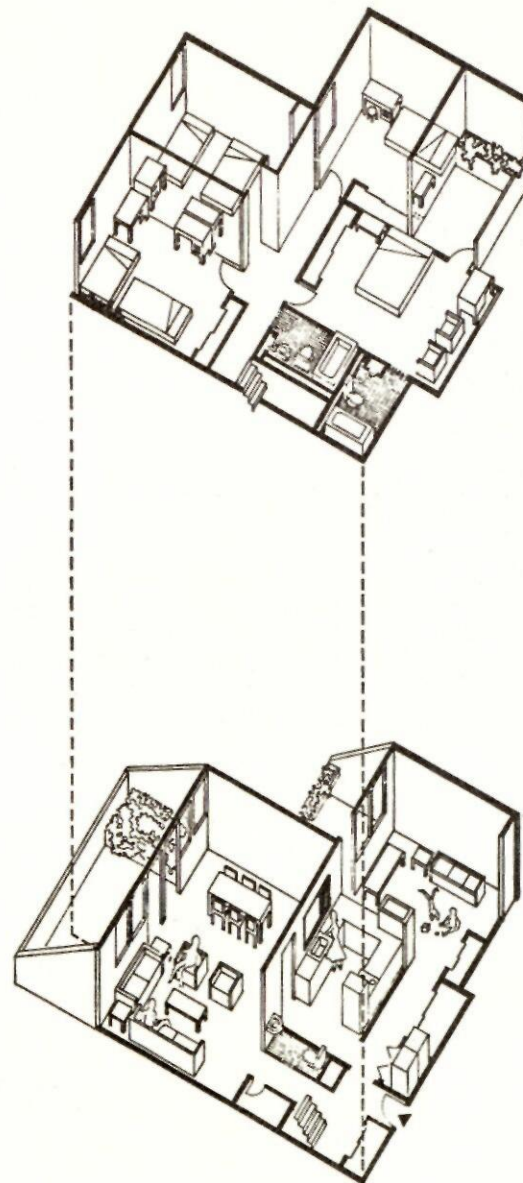


Visual and acoustical contact can be maintained from family and DU work areas through the glazed surfaces facing outdoor children's activity spaces.

PROVIDE AN IDENTIFIABLE INDOOR PLAY AREA NOT INTERFERING WITH OTHER ACTIVITIES IN THE UNIT BUT EASILY SUPERVISED BY THE MOTHER WHILE CARRYING OUT HER DAILY ACTIVITIES.



By placing the play area adjacent to the kitchen, but partially screened, visual and acoustical contact are maintained, allowing indirect supervision. The kitchen also acts as a buffer zone to other activities which may occur simultaneously.



4 BR LOW-RISE UNIT

MAXIMIZE AMOUNT OF STOPAGE SPACE IN ENTRY AREAS, BEDROOMS, AND KITCHENS.

CLOSE PROXIMITY TO LAUNDRY FACILITIES SHOULD BE PROVIDED. MAKE PROVISIONS FOR WASHERS AND DRYERS WITHIN ALL FAMILY UNITS.

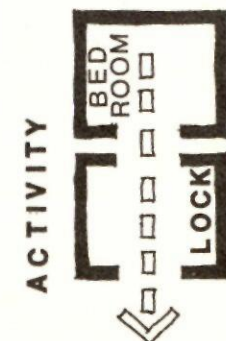
A washer-dryer compartment is provided in the vicinity of the kitchen-play area. The compartment can be closed off when not in use.

PROVIDE AN AREA FOR FAMILY INTERACTION AND IDENTITY.



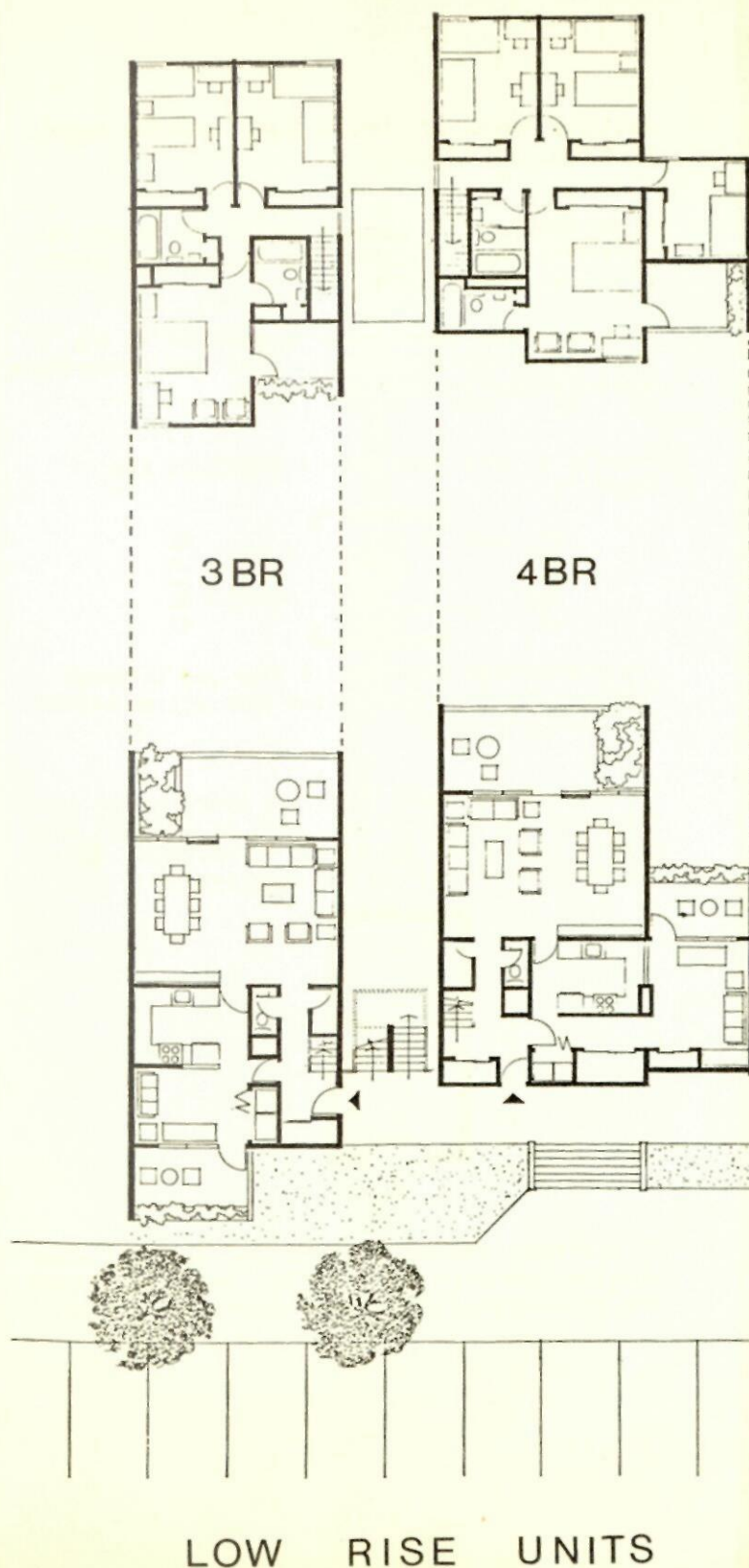
The overlapping of children's play and informal family gathering space allows interaction within the family to occur.

TEENAGE EGRESS FROM HIS PRIVATE SPACE TO THE EXTERIOR OF THE DWELLING UNIT MUST BE ACHIEVED WITH MINIMAL VISUAL AND ACOUSTICAL INTERFERENCE WITH THE OTHER ACTIVITIES IN THE DWELLING UNIT.

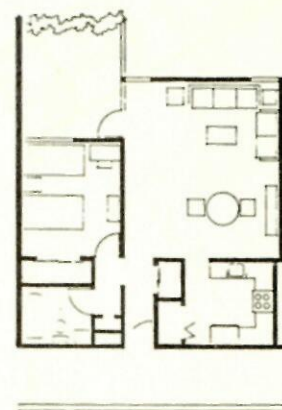
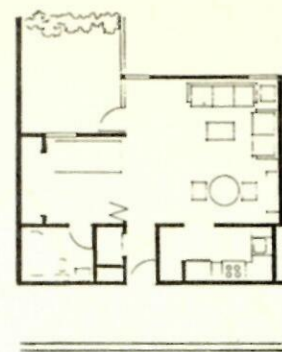


By utilizing the bedroom corridor, vertical circulation, and entryway as a lock, entry and egress are accomplished with a high degree of privacy.

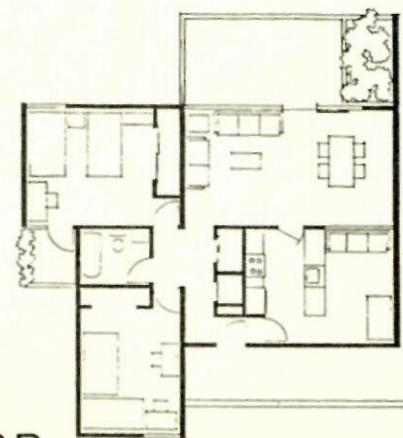




## EFFICIENCY



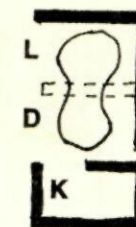
## 1 BR



## 2 BR

## HIGH RISE UNITS

MAXIMIZE LIVING OPTIONS WITH RESPECT TO KITCHEN-LIVING-DINING SPACES.



The dining and living areas have the capability of enclosure at the discretion of the occupant. The kitchen lacks this feature but could, with slight adjustment, provide greater flexibility for the occupants.

DWELLING UNITS FOR UNMARRIED PERSONS SHOULD NOT PRECLUDE OTHER TYPES OF TENANT USE.

Changes in occupancy are likely to occur in any housing development over a period of time. The unit should have the capability of responding to new occupants or mix of occupants who may or may not be of the same age, income, or marital status as the previous residents were.

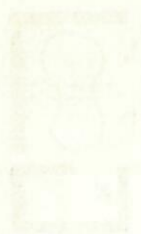
DWELLING UNITS FOR THE ELDERLY SHOULD EITHER BE ELEVATOR-SERVICED OR ELSE A MAXIMUM OF TWO FLOORS IN HEIGHT WITH ACCESS TO EACH UNIT AT GROUND LEVEL (ONE FLOOR MAXIMUM WHERE POSSIBLE.)

CONSIDER THE FOLLOWING MOBILITY REQUIREMENTS FOR ELDERLY WITHIN THE DWELLING UNIT: CHANGES OF LEVEL TO BE AVOIDED, NEARNESS TO THE BATHROOM AT NIGHT, WARM AND DRAFT FREE INTERIOR ENVIRONMENT.

A range of one level dwelling units is provided to accommodate the variety of situations that may occur involving the elderly, i.e., unmarried, widowed, or extended family living with married children.



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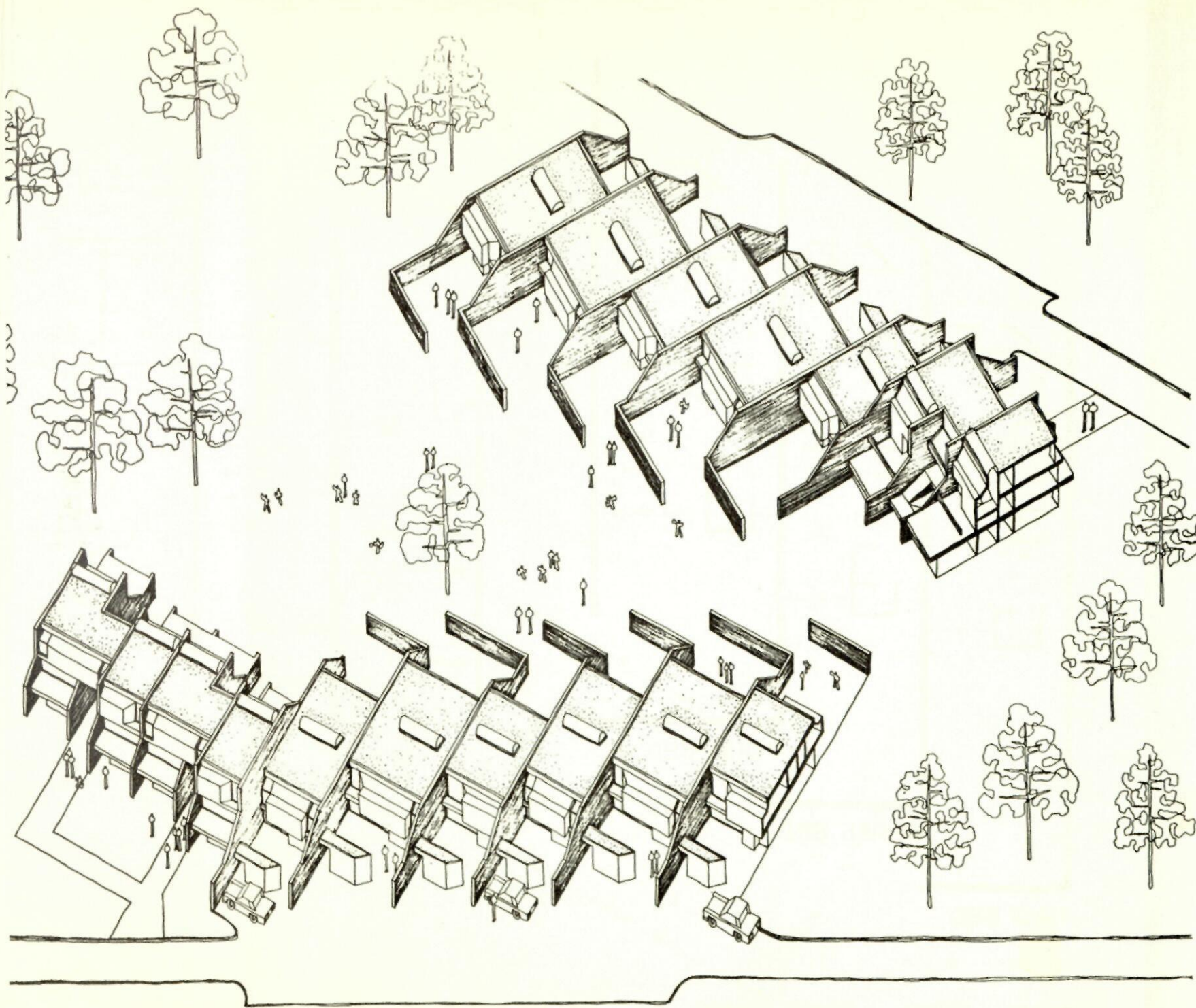
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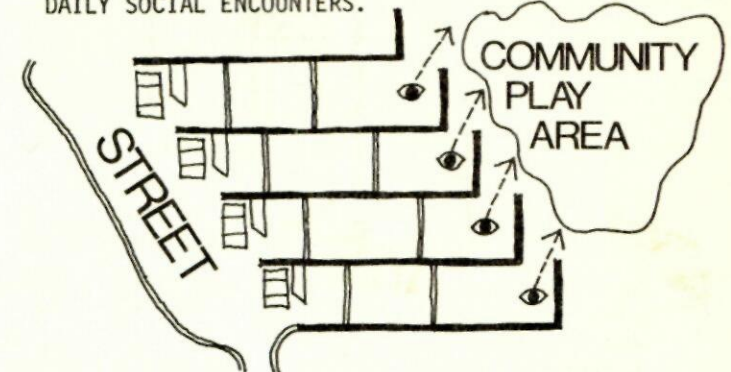




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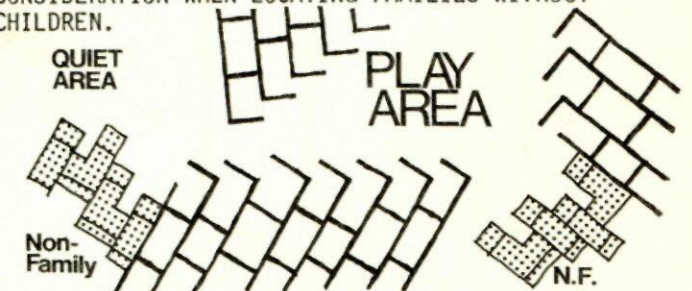
## Prototype four

THE ORGANIZATION OF DWELLING UNITS MUST ALLOW FOR CLOSE-KNIT COMMUNITIES BASED ON MUTUAL ASSISTANCE, I.E. DEPENDABILITY IN EMERGENCIES, DAILY SOCIAL ENCOUNTERS.



Each cluster of row houses is arranged to define a specific community play-area shared by all units in each cluster. The feeling of community is further reinforced by the shared parking access "street" which serves each cluster. Each family unit has its own parking stall feeding off this street so that all car related weekend activities become social. The staggered arrangement of the units provides for social scanning of community areas from semi-enclosed outdoor spaces but still allows for individual unit privacy.

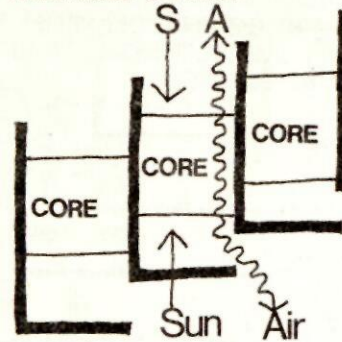
NOISE GENERATED FROM PLAY AREAS MUST BE TAKEN INTO CONSIDERATION WHEN LOCATING FAMILIES WITHOUT CHILDREN.



Family oriented units are arranged to define play-areas. Non-family units are located at the ends of each row to isolate them from the noise generated by play area and related family units but at the same time to include them in the community "whole."

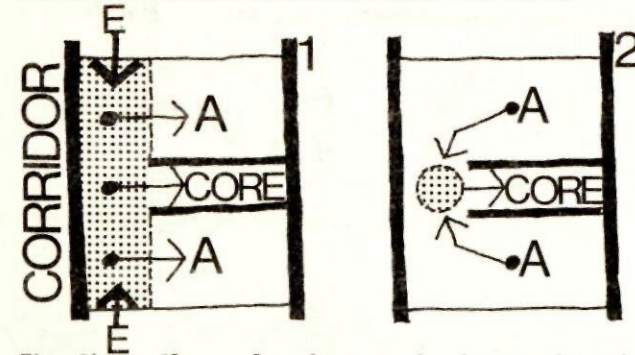


REGARD QUIETNESS, SUNLIGHT, SPACE, AND NATURAL VENTILATION AS NECESSARY AMENITIES WITHIN DWELLING UNIT IN ALL HABITABLE SPACES.

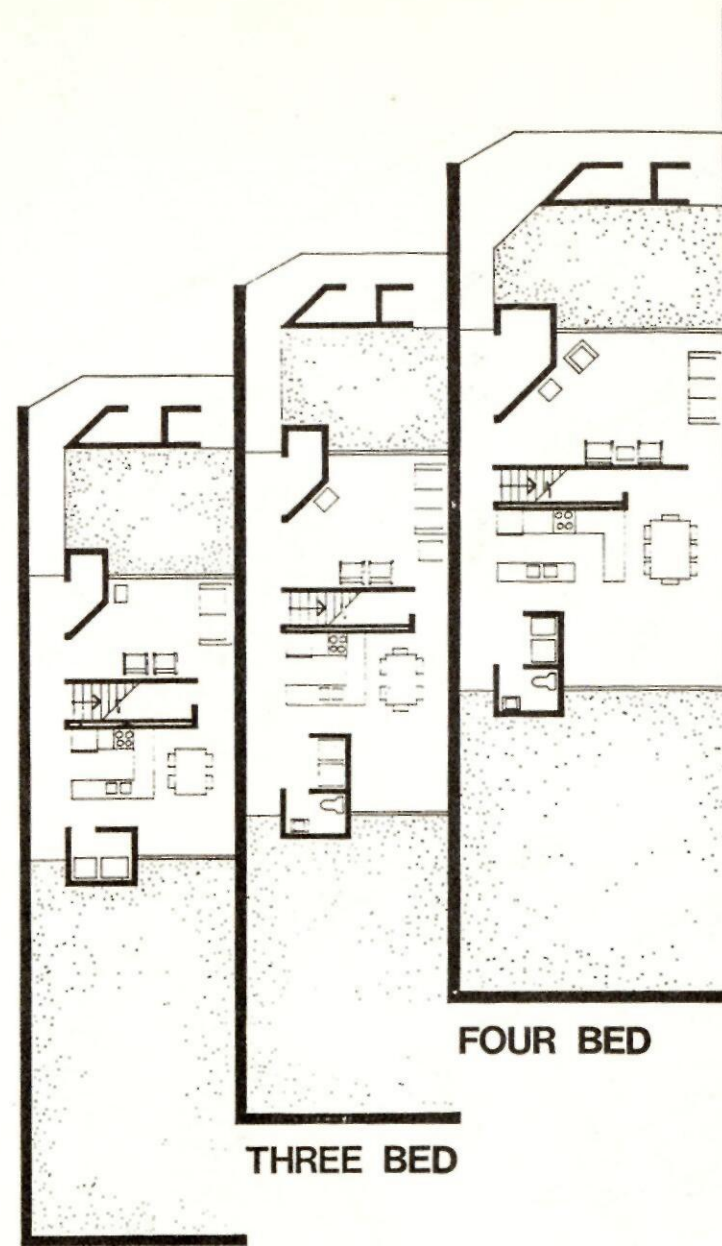


The simple party wall arrangement of the row houses allows sun and air in at each end of the unit. The party walls are bearing and are therefore heavy enough to provide acoustical separation between units. The general organization of the units themselves around a central core of utilities and vertical circulation locates the habitable spaces toward the sun and air at the ends of the unit. The central core furthermore acts as an acoustical buffer between living zones within the unit.

THE PASSAGE FROM ONE ACTIVITY AREA TO ANOTHER SHOULD BE EASY WITH MINIMAL DISTURBANCE TO THE OTHER ACTIVITIES OCCURRING ALONG THE PATH.



The first floor plan is organized around a circulation feeder with all living activities working off a simple corridor. This minimizes disturbance caused by "passers through" and greatly simplifies accessibility from activity zone to activity zone. On the second floor circulation is collected at a point at the stair core and taken downstairs directly on to the "feeder" corridor.

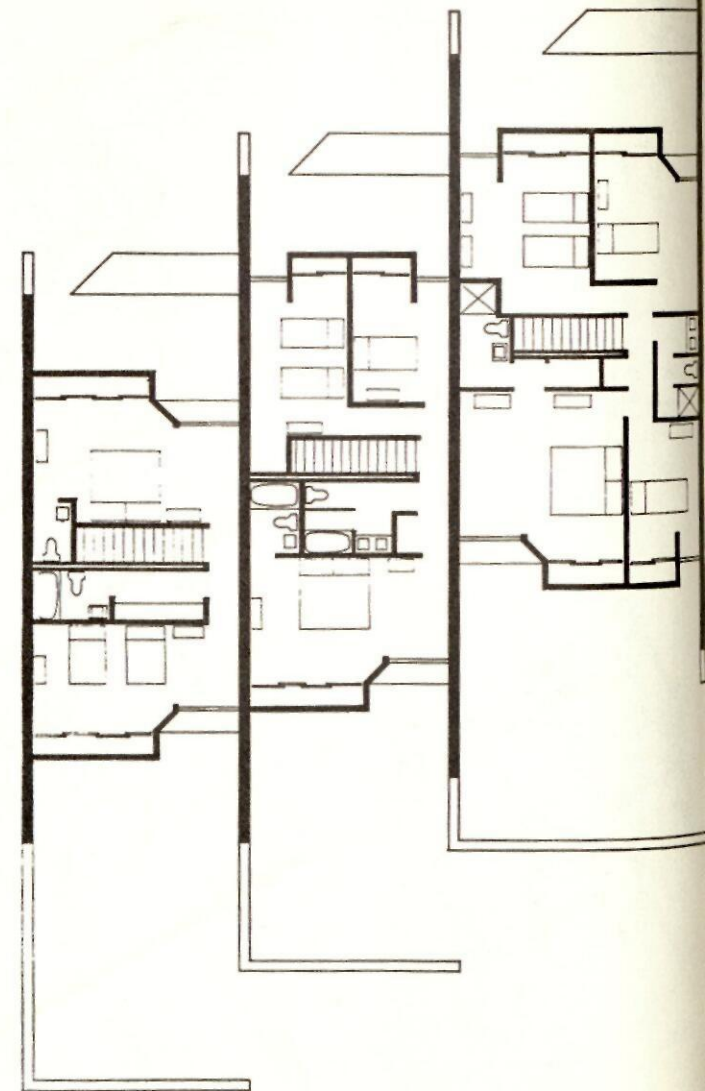


TWO BED

THREE BED

FOUR BED

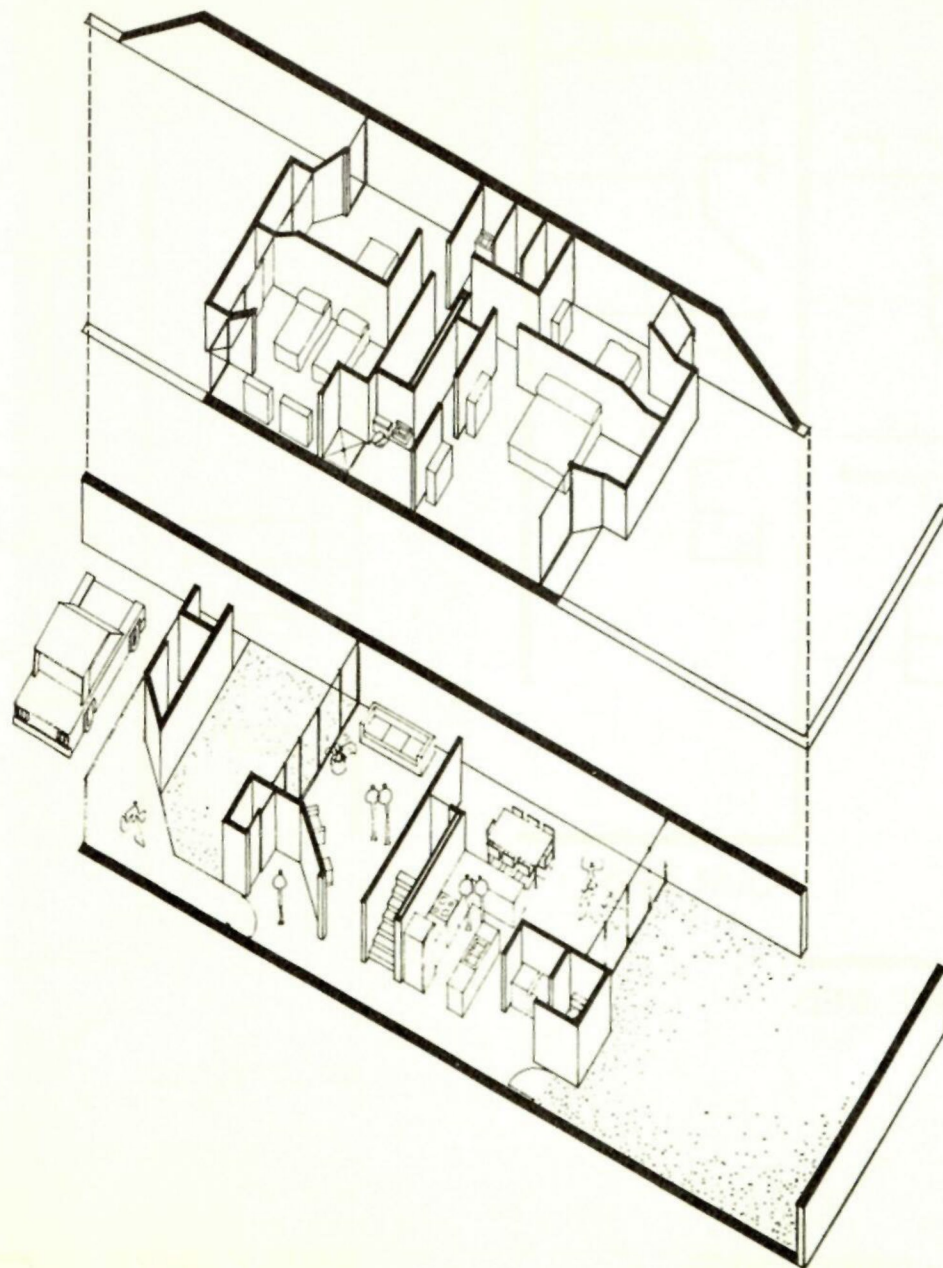
FAMILY UNITS · LOWER LEVEL



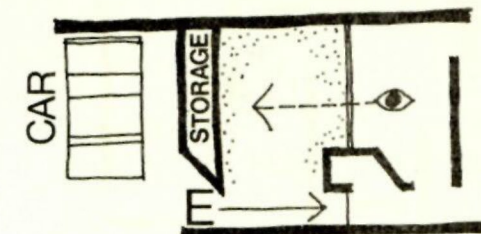
FAMILY UNITS · UPPER LEVEL





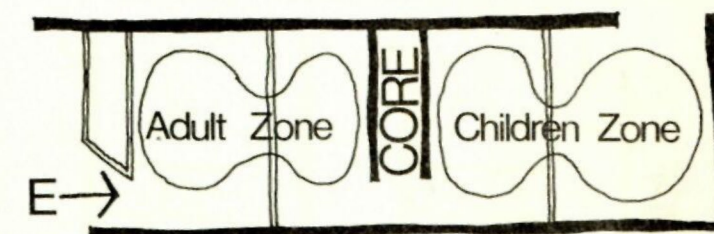


PROVIDE SECURE, COVERED (WHERE POSSIBLE), AND ACCESSIBLE PARKING.



Although parking in this scheme is uncovered, it is directly accessible to each family unit. Each unit is visually protected from the car in its individual stall by a storage area-wall which serves as an integral part of the architectonics of the unit design and also helps define its individual entrance.

PROVIDE PRIVATE OUTDOOR SPACE ADJACENT TO DWELLING UNIT FOR INDIVIDUAL, GROUP OR FAMILY ACTIVITIES WHICH DOES NOT INTERFERE WITH OTHER DWELLING UNIT FUNCTIONS. PROVIDE ORIENTATION SUCH AS TO MAXIMIZE CONTROLLED EXPOSURE TO SUNLIGHT.



Each unit is provided with private outdoor space at ground level on each end. This arrangement generates outdoor extension of the adult zone on the living room end of the unit and of the children's zone on the kitchen-playroom end of the unit. Interference between the activities of the two zones is minimized. Cross-over is possible, of course, depending on the activity and necessary exposure to sunlight.







# 5a. Assessing a project in terms of user-needs

## 5a.1 INTRODUCTION

For purposes of relating user needs of a necessary "academic" bias to real life situations, an existing housing project was evaluated. The "North Harvard Project," a recently constructed middle and moderate income housing project of stacked duplex, walk-up units was selected. The following specific user need/physical form categories were evaluated:

- |                          |                  |
|--------------------------|------------------|
| 1) Noise Control         | 6) Security      |
| 2) Visual Control        | 7) Safety        |
| 3) Sunlight Control      | 8) Accessibility |
| 4) Air Freshness Control | 9) Circulation   |
| 5) Weather Control       | 10) Usability    |

## 5a.2 METHOD

These criteria are keyed into, and form a further clarification of the original set of user needs developed by the class. Interviews of tenants, personal observation, and plan analysis were employed in the evaluation process.

A quantitative system of scoring is developed and applied, relying on both the reaction of users and the interpretations of the designer.

A measure of the "utility" of the design is expressed in terms of a numerical score with its verbal correlary.

## 5a.3 CONCLUSION

Evaluation of the North Harvard Project produced a circuit of information or "feed-back indicator" for the testing and re-evaluation of the original user need lists. It provided an important check on the following aspects of housing design/user need relationship:

- 1) validity of original user needs (testing them with actual users)
- 2) amplification of their meaning
- 3) change and modification (the effect of specific locality on generalized "non-locational" user needs)

It is self evident that there is no "complete" list of user needs. The list is life itself and includes a range of human requirements from the functional to the symbolic. The validity of this exercise is in the approach to design from a biased humanistic view-point; its methodological meaning in treating the needs of users in a more comprehensive fashion, in knowing more about the inevitable trade-offs that occur in balancing goals with practical reality.



# Evaluation of site

## A NOISE CONTROL

### 401.4 BTWN DWELLING UNITS & STREETS:

North Harvard Street is the source of a traffic noise particularly during the rush-hours. The dwelling units facing this street are subject to the traffic noise; however, no special provision was made to baffle the noise.

## B VISUAL PRIVACY

### 402.1 VISUAL PRIVACY BTWN D.U.'s & PARKING AREA:

- (a) There is not adequate visual separation between dwelling units and parking area. When cars come in to park with headlights on in the night, the headlights penetrate into all the dwelling units facing the parking area.

### 402.1 VISUAL PRIVACY BTWN D.U.'s & PEDESTRIAN PATHS:

- (b) Because of the lack of fund, the fence for each dwelling unit was not provided. Consequently, most of the dwelling units on the ground level have no visual privacy from pedestrian paths and/or public streets.

### 402.2 VISUAL SUPERVISION BTWN D.U.'s & PEDESTRIAN PATHS:

- (b) Because no playground (due to lack of fund) was provided, most of the young children play on the pedestrian paths. The pedestrian paths are visible from most of the dwelling units, which means mothers can supervise children playing on the pedestrian walkways from their apartments.

### 402.2 NO UNLIT ISOLATED COMMON FACILITIES:

- (d) Adequate lighting is provided throughout the entire site, particularly such areas as parking areas and pedestrian walkways.

### 402.3 IDENTIFIABILITY OF D.U. BLOCKS & COMMON FACILITIES:

All the dwelling unit blocks are readily identifiable and the parking areas are also easily identifiable since they are all located around the periphery of the site adjacent to streets.

### 402.4 VIEW

The arrangement of the dwelling unit blocks has not taken the advantage of open space view to the north where Harvard football and soccer fields are located.

## G ACCESSIBILITY

### 407.1 EASY ACCESS FROM D.U.'s TO ALL COMMON FACILITIES:

The only common facility on the site being the parking areas and pedestrian paths, the accessibility to the common facilities from dwelling units can be considered good.

### 407.4 READY ACCESS FOR EMERGENCY VEHICLES:

Emergency vehicles such as ambulance or fire-engines are only accessible to parking areas; however, in the worst case, the vehicles can reach each dwelling units through the pedestrian paths and grass areas.

## H CIRCULATION

### 408.1 SEPERATION OF PEDESTRIAN AND VEHICULAR MOVEMENT:

There is a separation between pedestrian and vehicular movement; however, the area where pedestrians vehicles come together, the conflict remains unresolved.

## I MINIMUM FACILITIES TO BE PROVIDED

### 409.1 PLAYGROUND:

Playground should be provided in every housing project. It is indeed unbelievable that the lack of fund prohibited the designer to build playgrounds in this project.

### 409.2 TREED AREA:

No treed area is in existence on the site. Some small trees are planted in the central open area of the site.

### 409.3 HARD-SURFACED COURT FOR BALL GAMES:

No provision is made for older children to play ball games within the site. The children are playing ball games either in the parking areas or pedestrian paths.

### 409.6 INFORMAL GATHERING AREA:

Since no informal gathering area is provided in the site, some residents are using pedestrian paths for informal gathering.

## J USABILITY (FURNISHABILITY, DECORABILITY)

### 410.1 PARKING, DRIVEWAYS, & SERVICE ROADS:

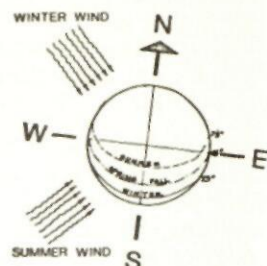
Parking areas are all laid out conveniently: no parking space is more than 150 ft from a dwelling unit. Driveways and service roads are minimal in their total length and have very little contact with pedestrians.

### 410.5 PEDESTRIAN CIRCULATION NETWORK:

Pedestrian circulation network is conveniently laid out, but there are a few areas where the drainage is so bad that after a heavy rainfall, the walkway is inaccessible.



0 15 30 60 120



NORTH HARVARD ST

WESTERN AVENUE

## SITE

FOR THE CONTENTS OF REF. NO.'s, SEE SECTION 3

REF. NO	USES OF ALL AGE GROUP TYPES
	V R S
A. NOISE CONTROL:	401
1. BTWN D.U.'s & PLAY AREAS	401.1
2. BTWN D.U.'s & OTHER ACTIVE RECREATIONAL AREAS	401.2
3. BTWN D.U.'s & SERVICE PICK-UP AREAS	401.3
4. BTWN D.U.'s & STREETS	401.4
5. BTWN SITE & ITS IMMEDIATE ENVIRONMENT	401.5
B. VISUAL CONTROL:	402
1. VISUAL PRIVACY (VISUAL SEPERATION)	402.1
a) BTWN D.U.'s & PARKING (auto headlights)	402.1a
b) BTWN D.U.'s & PEDESTRIAN PATHS/PUBLIC ST.'s	402.1b
c) BTWN D.U.'s & SERVICE PICK-UP AREAS	402.1c
d) BTWN D.U.'s & THE IMMEDIATE SURROUNDING OF THE SITE	402.1d
2. VISUAL SUPERVISION (VISUAL CONNECTION)	402.2
a) BTWN D.U.'s & PLAY GROUND	402.2a
b) BTWN D.U.'s & PEDESTRIAN PATHS	402.2b
c) BTWN PEDESTRIAN PATHS & PLAY AREAS	402.2c
d) NO UNLIT ISOLATED COMMON FACILITIES	402.2d
3. IDENTIFIABILITY	402.3
a) OF D.U. BLOCKS	402.3a
b) OF ALL THE COMMON FACILITIES	402.3b
4. VIEW (VISUAL EXTENSION)	402.4
a) FROM PASSIVE TO ACTIVE RECREATION AREAS	402.4a
b) BTWN THE SITE & DESIPABLE PART OF ITS ENVT.	402.4b
C. SUNLIGHT CONTROL:	403
1. ALL THE COMMON FACILITIES SHOULD BE ADEQUATELY EXPOSED TO DIRECT SUNLIGHT.	403.1
D. WEATHER CONTROL:	404
1. FREQUENTLY USED PEDESTRIAN PATHS	404.1
2. ORIENTATION OF BUILDINGS TOWARDS PPREVAILING WINDS	404.2
E. SECURITY:	405
1. SECURITY CONSIDERATION ON ALL COMMON FACILITIES	405.1
F. SAFETY:	406
1. SAFETY CONSIDERATION ON ALL PHYSICAL ELEMENTS WITHIN THE SITE.	406.1
G. ACCESSIBILITY (ABILITY TO ENTER & EXIT):	407
1. EASY ACCESS FROM D.U.'s TO ALL COM FACILITIES	407.1
2. EASY ACCESS TO & FROM THE SITE	407.2
3. EASY ACCESS TO VARIOUS FACILITIES IN THE NEIGHBORHOOD OF THE SITE	407.3
4. READY ACCESS FOR EMERGENCY VEHICLES	407.4
5. EASY ACCESS FOR SERVICE VEHICLES	407.5
H. CIRCULATION (PASSAGE):	408
1. SEPERATION OF PEDESTRIAN & VEHICULAR MOVEMENT	408.1
2. CONNECTING POINTS OF PEDESTRIAN & VEHICULAR MOVEMENT NETWORKS	408.2
3. BTWN D.U.'s & ALL COMMON FACILITIES	408.3
4. BTWN D.U.'s & FACILITIES IN VICINITY OF SITE	408.4
I. MIN FACILITIES TO BE PROVIDED:	409
1. PLAY GROUND	409.1
2. TREED AREA	409.2
3. HARD SURFACED COURT FOR BALL GAMES	409.3
4. SWIMMING POOL (if not avail in the community)	409.4
5. PARKING (D.U. : CAR = 1 : 1)	409.5
6. INFORMAL GATHERING PLACES	409.6
J. USEABILITY (FURNISHABILITY, DECORABILITY):	410
1. PARKING, DRIVEWAYS, & SERVICE ROADS	410.1
2. PLAY GROUND	410.2
3. HARD SURFACED COURT	410.3
4. TREED AREA & INFOMPAL GATHERING PLACES	410.4
5. PEDESTRIAN CIRCULATION NETWORK	410.5
6. CAR WASHING & REPAIRING APEA	410.6
TOTAL --	1110
DESIGNER:	EFFCT-INDEX
EVALUATOR:	EV-INDEX



# Evaluation of d.u. cluster (low-rise)

## A NOISE CONTROL

### 301.2 BTWN D.U.'s:

The structure of this walk-up apartment building is composed of precast concrete panels which serve as an excellent sound insulator between all the dwelling units.

### 301.3 BTWN D.U.'s & COMMON AREAS/SPACES:

The common areas/spaces within the building are

- a) stairwell with vestibules
- b) laundry room
- c) clinic (future)

Each stairwell serves 3 to 5 units depending on the arrangement of different types of dwelling units. Hence, it is relatively private for these units and quiet most of the time. All the vestibule areas (floor, walls, ceiling) are bare concrete and are not provided with any kind of sound absorbants.

Laundry room is located on the ground level of the portion of the building set aside for common use. Noise barrier between the laundry room and its adjacent dwelling units is excellent. However, acoustics of the space, like that of common vestibules, is inadequate.

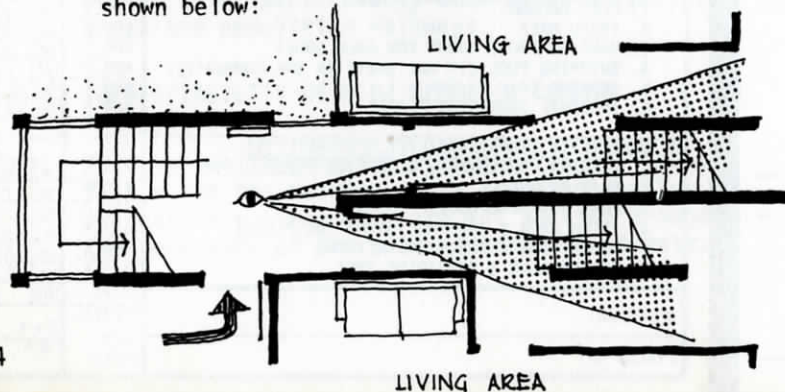
A clinic is planned to be located in the portion of the building set aside for common use. There will be no noise problem between the clinic and the adjacent dwelling units.

## B VISUAL CONTROL

### 302.1 BTWN D.U. & D.U.; D.U.'s & COMMON AREAS/SPACES:

The visual privacy between dwelling units on the upper floor is well provided; in the entire project, there is no situation where a window in a dwelling unit has direct visual connection with a room of another dwelling unit. However, the units on the ground floor suffer a great deal from lack of visual privacy from the next door neighbor or people using the stairwell.

The visual privacy between dwelling units and common area such as vestibule is provided as shown below:



### 302.2 NO UNLIT ISOLATED COMMON AREAS/SPACES:

As indicated in the above diagram, the stairwell is enclosed with glass more than two-third of its entire surface. Practically every corner of the stairwell is visually supervisable from outside. There is also adequate number of light fixtures to light the inside of the stairwell during the night.

### 302.3 IDENTIFIABILITY OF INDIVIDUAL DWELLING UNITS:

Individual dwelling units are not readily identifiable from outside. The facade with balconies are better than the facade with stairwell; however, the designer should have provided an area in the balcony where each resident can express the identity of his unit by such elements as flowers, plants, etc.

## C AIR FRESHNESS (ODOR) CONTROL:

### 303.2 FORCED VENT FOR ENCLOSED STAIR & LAUNDRY:

The ventilation in the stairwell is not adequate. The only means of ventilation is the door leading to outside from the stairwell, and it is, by no means, an adequate way of removing the stagnant air in the stairwell.

The laundry room does not have adequate ventilation for removing the hot and unpleasant steamed air.

## H CIRCULATION (PASSAGE)

### 308.2 FROM ONE DWELLING UNIT TO ANOTHER:

The circulation from one dwelling unit to another is either through the stairwell or from one stairwell to another through the pedestrian path outside.

### 308.3 FROM DWELLING UNITS TO ALL COMMON AREAS/SPACES:

The circulation from each dwelling unit to all the common spaces contained within the building such as laundry room, drug store, clinic, etc. is not optimal-- the farthest distance from the laundry room to a dwelling unit is 550' through open pedestrian path.

### 308.4 FROM DWELLING UNITS TO REFUSE DISPOSAL POINTS:

The dumpsters are located near the public streets, remote from dwelling units. The circulation from dwelling units to dumpsters is inconvenient and in conflict with automobile movements in the parking areas.

## I MINIMUM FACILITIES TO BE PROVIDED

### 309.1 MULTI-USE ROOM:

A multi-use room for various resident--community activities should be provided. In this housing project, a space for a such use is provided, but unfortunately it is set aside for a "Space for Pent."

### 309.2 NURSERY & DAYCARE CENTER:

In any housing project, there should be a nursery and daycare center not only for taking care of children but also to enhance interactions of residents in all age groups: healthy elderlies can participate in the nursery and daycare center operations and thereby establishing social interactions with children, mothers, fathers, etc. Again in this housing project, the designer provided adequate spaces for such uses, but these spaces are set aside for "Space for Pent."

### 309.4 EXTERIOR BULK STORAGE SPACE FOR EACH DWELLING UNIT:

Provisions for storing articles such as tires, bicycles, etc. are provided for dwelling units, but no lockable space is provided for articles such as baby carriage, outdoor furniture, etc.

## J USEABILITY (FURNISHABILITY, DECORABILITY, CHANGEABILITY)

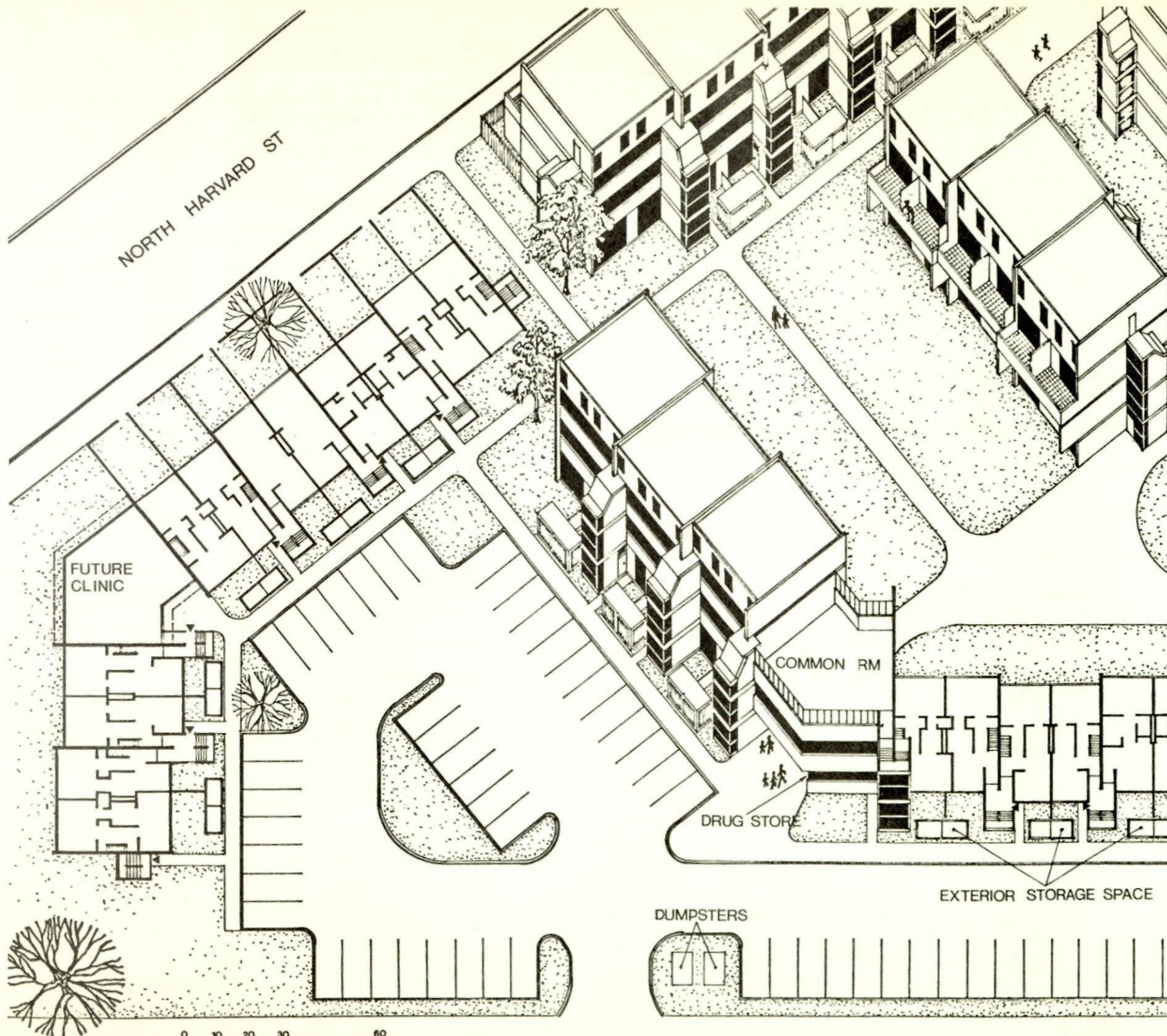
### 310.1 STAIRWELL AND COMMON VESTIBULES:

The stairwell is adequate in size but the common vestibules are much too small to accommodate more than 3 or 4 people at once. The general appearance of the stairwell and connected common vestibules is unpleasant, reminding one of the look of a "Public Housing Project."

### 310.2 LAUNDRY ROOM:

The laundry room is too small to serve 225 units within the project. A little space provided for people to sit while waiting for their laundry is grossly inadequate.





## D.U. CLUSTER - LOW-RISE

FOR THE CONTENT OF REF.NO's, SEE SECTION 3

- A. NOISE CONTROL:**  
 1. COMMON AREAS/SPACES - ACOUSTICS (stair, stoop, landing, multi-use rm, nursery & daycare center, laundry rm, etc.)  
 2. BTWN D.U.'s  
 3. BTWN D.U.'s & COMMON AREAS/SPACES
- B. VISUAL CONTROL:**  
 1. VISUAL PRIVACY (VISUAL SEPERATION)  
 a) BTWN D.U. & D.U.  
 b) BTWN D.U.'s & COMMON AREAS/SPACES  
 2. VISUAL SUPERVISION (VISUAL CONNECTION)  
 a) NO UNLIT ISOLATED COMMON AREAS/SPACES  
 b) EASY VISIBILITY OF EMERG EGRESS  
 3. IDENTIFIABILITY  
 a) OF INDIVIDUAL D.U. (FROM STOOP OR EXT)  
 b) OF ALL COMMON AREAS/SPACES
- C. AIR FRESHNESS (ODOR) CONTROL:**  
 1. NATURAL OR FORCED VENT FOR COM SPACES  
 2. FORCED VENT FOR ENCLOSED STAIR & LAUNDRY
- D. WEATHER PROTECTION:**  
 1. AT ENTRY AREAS OF D.U.'s & COM SPACES
- E. SECURITY:**  
 1. SECURITY CONSIDERATION ON ACCESS TO BLDG
- F. SAFETY:**  
 1. SAFETY CONSIDERATION ON ALL PHYSICAL ELEMENTS WITHIN COM AREAS/SPACES
- G. ACCESSIBILITY (ABILITY TO ENTER & EXIT):**  
 1. EASY ACCESS TO ALL COM AREAS/SPACES  
 2. FROM D.U.'s TO VARIOUS MEANS OF EGRESS
- H. CIRCULATION (PASSAGE):**  
 1. BTWN BLDG ENTRANCE & D.U.'s  
 2. FROM ONE D.U. TO ANOTHER  
 3. FROM D.U.'s TO ALL COMMON AREAS/SPACES  
 4. BTWN D.U.'s & REFUSE DISPOSAL POINT
- I. MIN FACILITIES TO BE PROVIDED:**  
 1. MULTI-USE RM  
 2. NURSERY & DAYCARE CENTER  
 3. HOBBY/WORKSHOP  
 4. EXTERIOR BULK STORAGE SPACE FOR D.U.'s
- J. USEABILITY (FURNISHABILITY, DECORABILITY, CHANGEABILITY, ETC.):**  
 1. STAIR, STOOP, LANDING  
 2. LAUNDRY ROOM  
 3. MULTI-USE ROOM  
 4. NURSERY & DAYCARE CENTER  
 5. HOBBY/WORKSHOP  
 6. EXTERIOR BULK STORAGE SPACE

REF. NO.	OCCUPATION	D.U. CLUSTER - LOW-RISE			D.U.'s on ground flr		D.U.'s on upper flr		
		FOR THE CONTENT OF REF.NO's, SEE SECTION 3			V	F	S	F	S
301									
301.1		30	15	390		15	450		
301.2		30	50	900		30	900		
301.3		30	25	690		25	690		
302									
302.1									
302.1a		30	10	300		25	750		
302.1b		30	10	300		25	690		
302.2									
302.2a		30	25	750		25	750		
302.2b		30	30	900		30	900		
302.3									
302.3a		30	15	690		15	690		
302.3b		30	16	840		15	840		
303									
303.1		30	25	750		25	750		
303.2		30	8	240		8	240		
304									
304.1		30	25	690		25	690		
305									
305.1		30	2	60		15	450		
306									
306.1		30	15	390					
307									
307.1		30	25	690		25	690		
307.2		30	30	900		30	900		
308									
308.1		30	25	750		25	750		
308.2		30	17	510		17	510		
308.3		30	27	810		25	690		
308.4		30	5	150		5	90		
309									
309.1		30	12	360		12	360		
309.2		30	10	300		10	300		
309.3		30	8	240		8	240		
309.4		30	13	390		13	390		
310									
310.1		30	6	180		6	180		
310.2		30	13	390		13	390		
310.3		30	8	240		8	240		
310.4		30	8	240		8	240		
310.5		30	10	300		10	300		
310.6		30	15	450		15	450		
TOTAL		900		14790			15900		
EFFICIENCY INDEX									

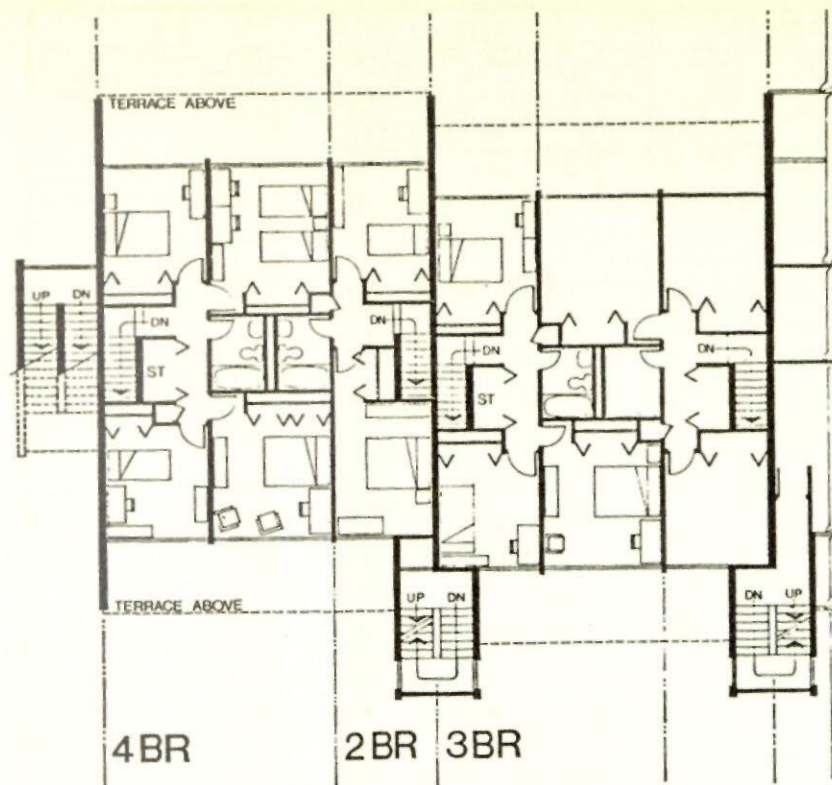
DESIGNER:

EVALUATOR:

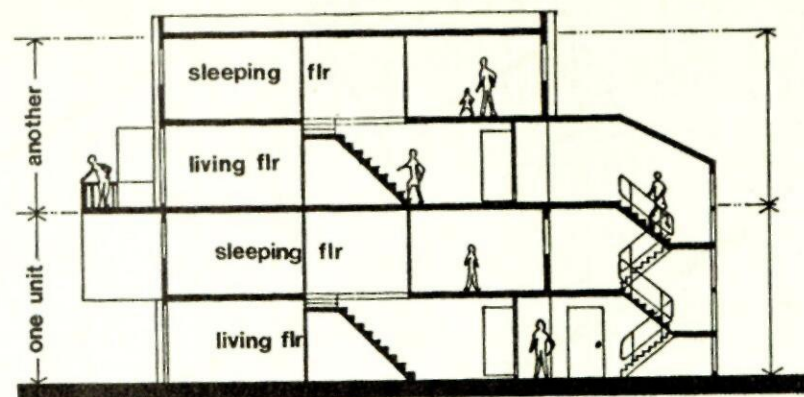
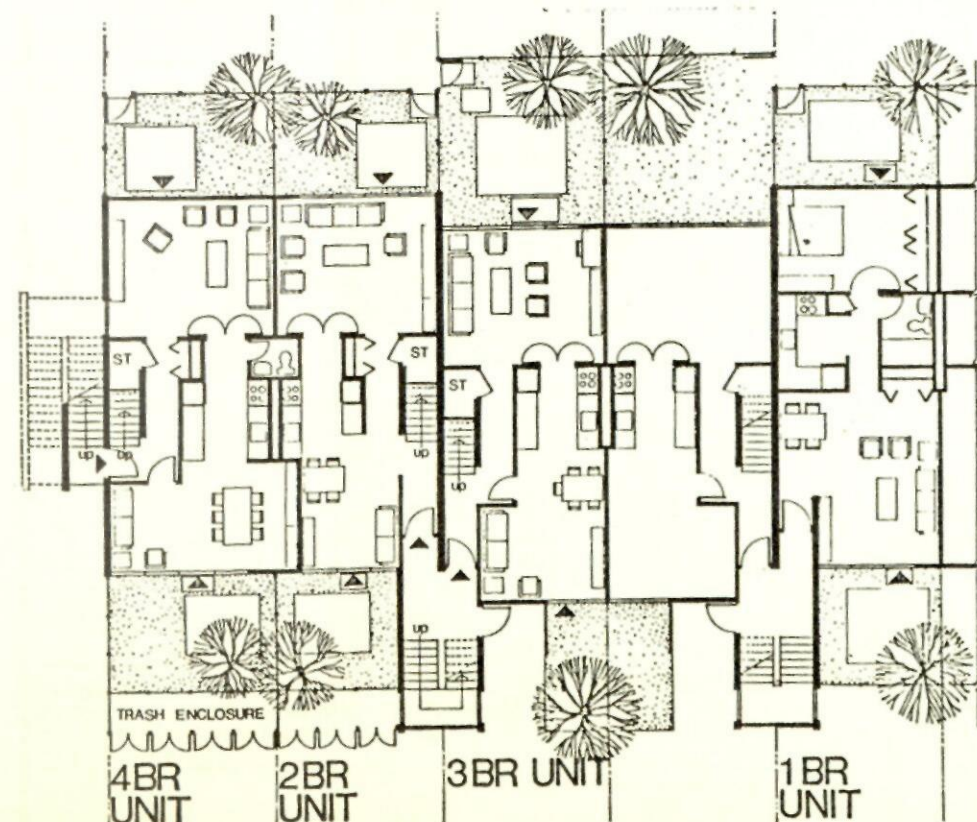








SECOND FLOOR



SECTION

0 4 8 16

## NORTH HARVARD

Address: North Harvard St & Western Ave, Brighton

Architect: PARD Team

Owner: Charlesview Incorporated

Date of Completion: Fall, 1971

TYPE OF BUILDING: Walk-up

INCOME: Middle & Low

### BUILDING CHARACTERISTICS:

Gross Building Area.....148,000 s.f.

Net Usable Area.....133,000 s.f.

Efficiency Index(Usable/Gross Bldg)..... 90 %

Types of Dwelling Unit in the Building:

Efficiency	-- units	3-BR	60 units
1-BR	72 units	4-BR	40 units
2-BR	40 units	5-BR	-- units

Structural: Precast Concrete

Mechanical:

Services: Laundry

Building Regulations: none

### DWELLING UNIT CHARACTERISTICS:

Type of DU	Eff.	1-BR	2-BR	3-BR	4-BR	5-BR
BALCONY		56.0	56.0	56.0	56.0	
LR		152.0	168.0	168.0	168.0	
DR			100.0	120.0	144.0	
K		63.0	64.0	64.0	64.0	
BR 1		130.0	130.0	132.0	110.0	
BR 2		--	130.0	110.0	132.0	
BR 3		--	--	110.0	132.0	
BR 4		--	--	--	100.0	
BR 5		--	--	--	--	
Net Lvg		401.0	648.0	760.0	906.0	
BATH		35.0	35.0	35.0	50.0	
STORAGE		30.0	68.0	68.0	90.0	
OTHERS		30.0	100.0	130.0	100.0	
Gross Unit		496.0	851.0	993.0	1146.0	
Net L/G.U.		83 %	77 %	71 %	80 %	
Rent/month		\$125	\$150	\$177	\$195	

Any extra rent for

Parking..... none

Recreational Facilities... none

### REMARKS:



# Evaluation of 4-bedroom unit

## A NOISE CONTROL



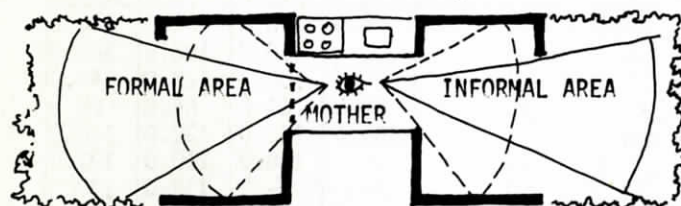
101.2 BTWN BATH & BEDROOMS:  
Noise control between bath and bedrooms is achieved by placing closets between bath & bedrooms.

101.3 BTWN BR AREA & LIVING AREA:  
By putting bedrooms on the upper floor & living area on the lower floor a good audial privacy is achieved in the bedroom area.

## B VISUAL CONTROL

102.1 VISUAL PRIVACY BTWN BR AREA & LIVING AREA:  
Achieved by having separate floors for bedrooms and living area. The door of each bedroom is carefully located to avoid visual exposure of dressing area.  
The half bath between living room and kitchen can be easily exposed to living room whenever its door is opened.

102.2 VISUAL SUPERVISION BTWN KITCHEN & FAMILY/PLAY RM:  
Can be accomplished effortlessly. Also, children playing in front & backward can be visually supervised by mother from kitchen.

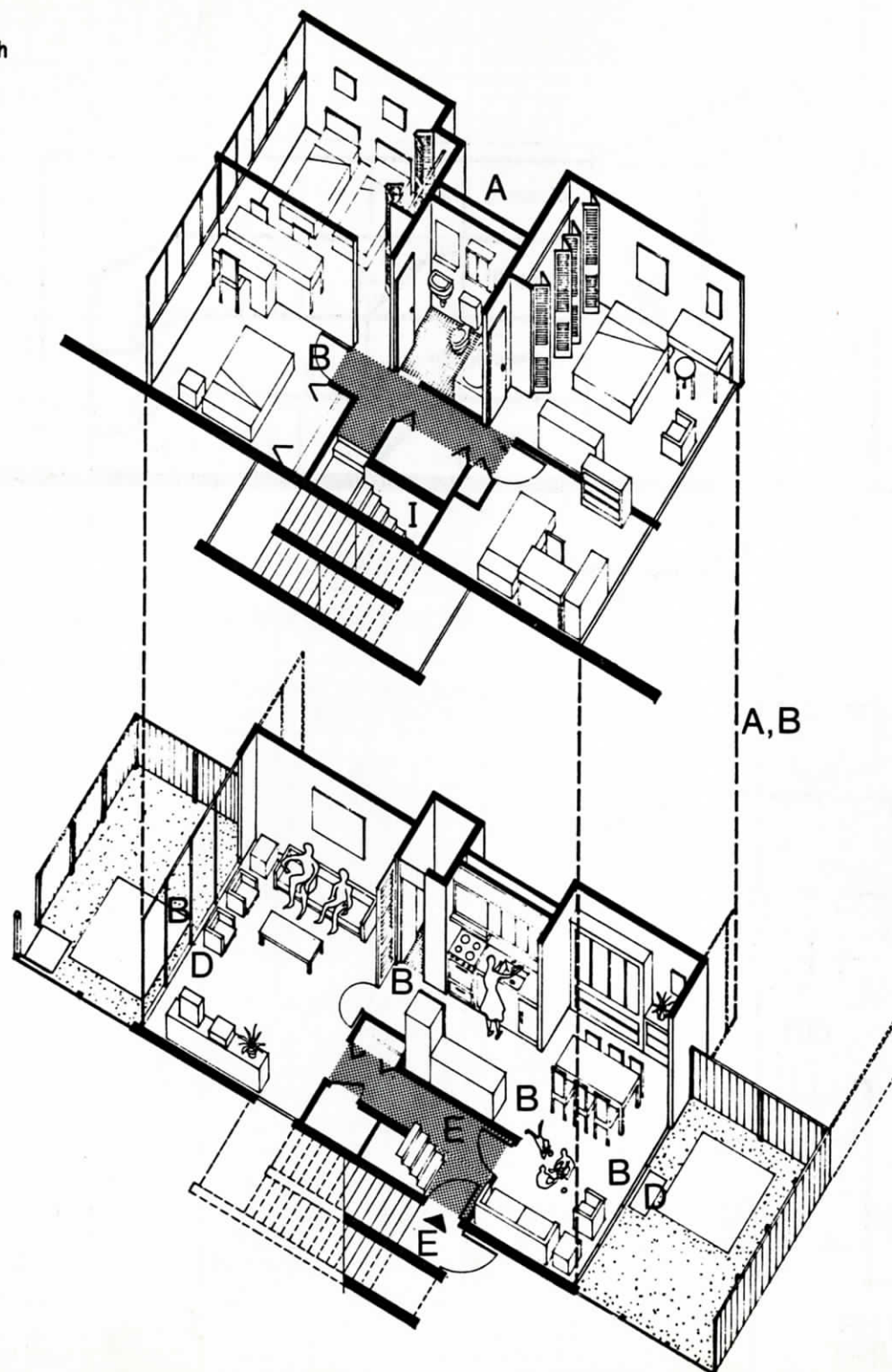


## E WEATHER CONTROL

105.1 BTWN ENTRIES & LIVING AREA:  
A weather protected area is provided at the immediate exterior as well as interior area of the main entry; however, the large glass doors in the living room and family/dining room create a problem of cold draft during very cold season.

## I CIRCULATION

109.3/4 BTWN MAIN ENTRY & LIVING AREA/BEDROOM AREA:  
Circulation from the main entry to bedrooms can be achieved without any visual interference with living/family/dining area.  
Circulation between all the rooms within the dwelling unit is well worked out without waste of space.



## J USABILITY (CHANGEABILITY, DECORABILITY, FURNISHABILITY)

110.1/2/3 LIVING ROOM & FAMILY/PLAY/DINING



Livingroom, family/dining/play room can be easily furnished and decorated, but in terms of changeability options the spaces are too small to accommodate a wide range of changeability options. Particularly the family/dining/play room is much too small to accommodate the three activities.

Both spaces have uninterrupted walls on two sides. These walls offer an area to hang pictures, to put furnitures against, etc.

110.8/9 FOYER, CLOSETS, STORAGE SPACES:

Foyer has minimum space for its users to take off or put on coats without inconvenience. Storage space and closet are conveniently located in foyer as well as in bedrooms and bathroom vicinity. It is, however, unfortunate that a broom closet is not provided in kitchen to store a vacuum cleaner, mop, etc.

110.11 WINDOWS:

Windows are large and most of the tenants enjoy generous sunlight through the windows. Also since both ends of the dwelling are open, all the rooms can get a natural through-ventilation.

No provision is provided at the window area to put flowers and plants, which many tenants would like to have.

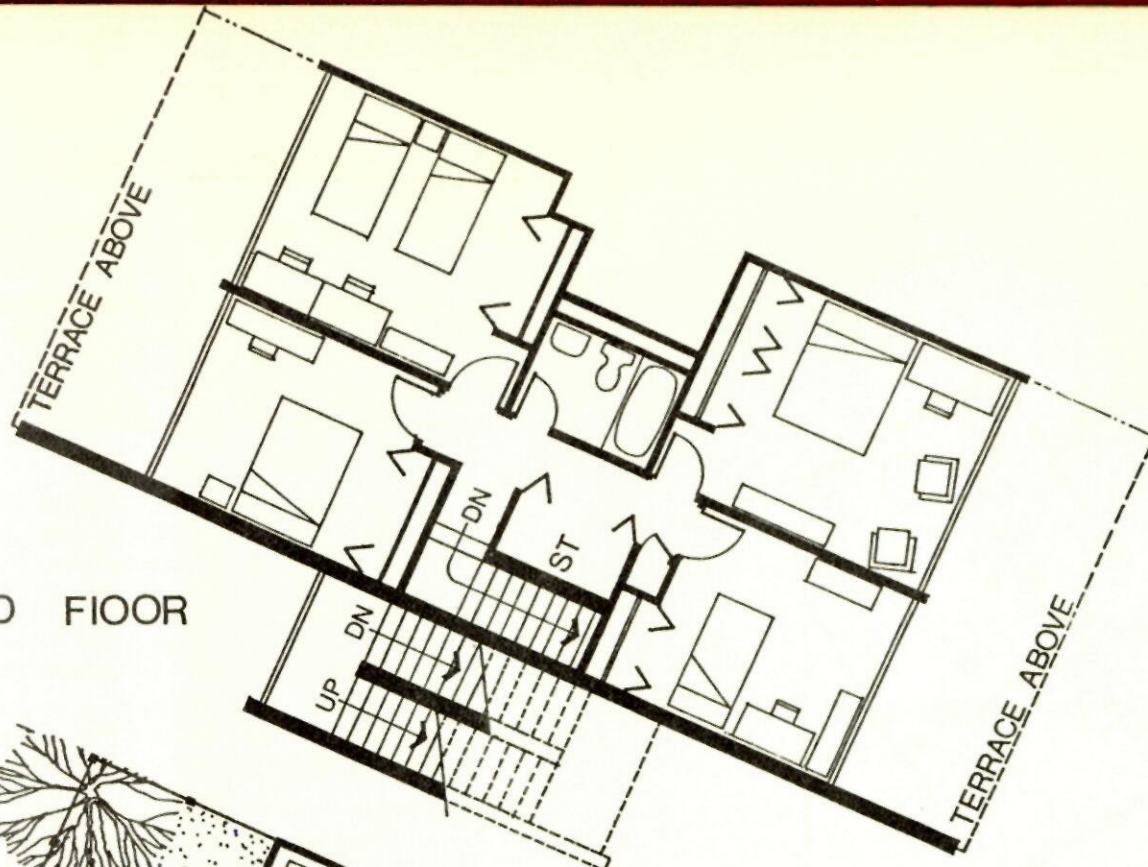
110.13 BALCONY/YARD:

Balcony is large enough (7'x 16') and has adequate privacy to be used as an extension of livingroom for sitting or dining. Here again no provision is provided for plants and flowers.

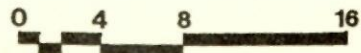
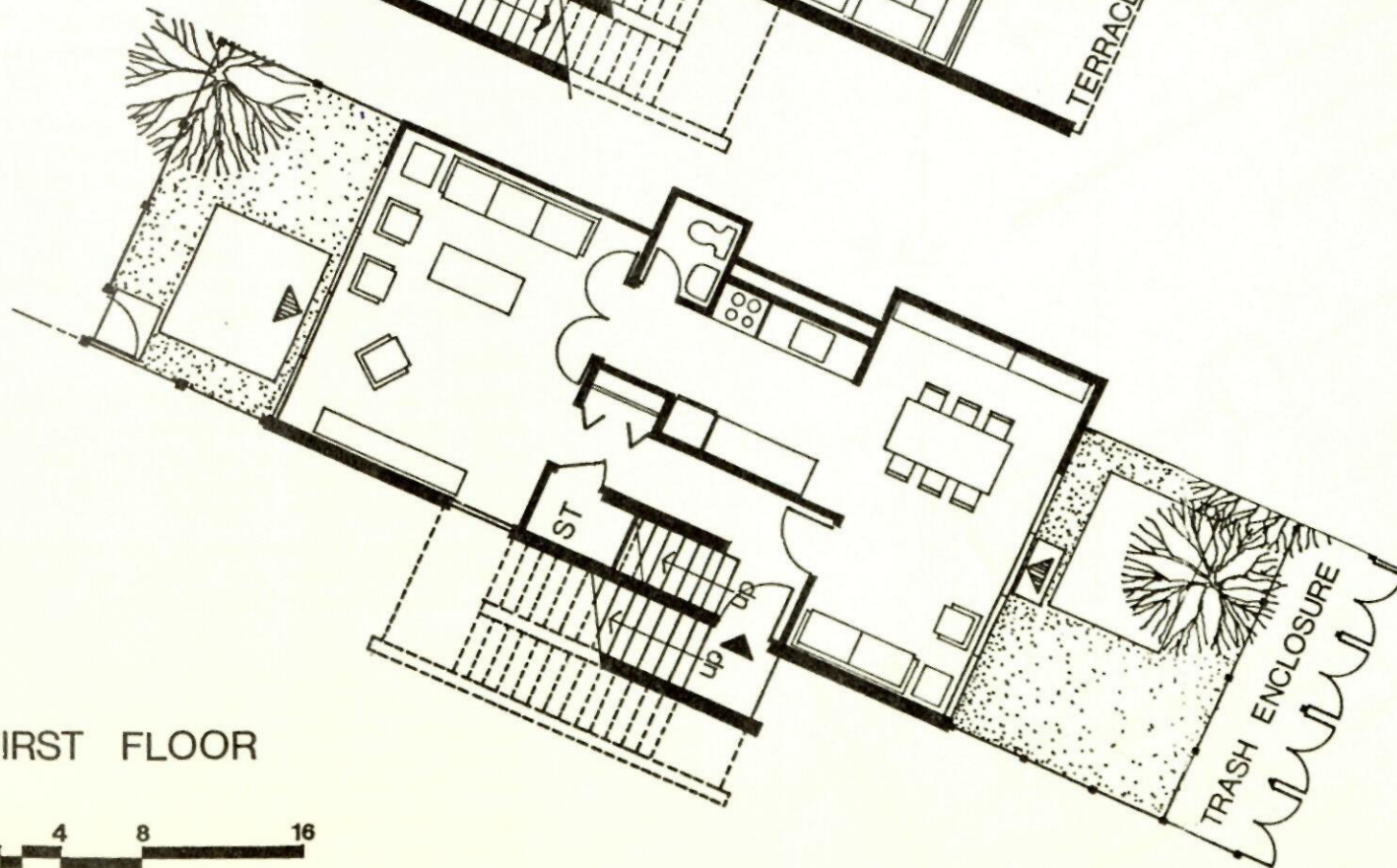
Front and back yards are much too small to be used for anything. Perhaps the south oriented yard may be able to use for growing flowers and plants.



SECOND FLOOR



FIRST FLOOR



DWELLING UNIT		D.U. TYPES		4 - BR											
FOR THE CONTENTS OF REF.NO.'s, SEE SECTION 3		USER TYPE	REF.NO.	couple w/ 3-5 child (0-6 yrs)			couple w/ 3-4 child (6-12 yrs)			couple w/ 3 child (teenager)					
				V	T	S	V	T	S	V	T	S			
A. NOISE CONTROL:			101												
1. EACH ROOM/SPACE (ACOUSTICS)			101.1	30	25	750	30	25	750	30	17	510			
2. BTWN BR's & BATH			101.2	30	25	840	30	25	840	30	25	840			
3. BTWN BR AREA & LIV'G/DIN'G/KITCHEN AREA			101.3	30	30	900	30	30	900	30	30	900			
4. BTWN FLOORS			101.4	30	30	900	30	30	900	30	30	900			
B. VISUAL CONTROL:			102												
1. VISUAL PRIVACY (VISUAL SEPERATION)			102.1												
a) BTWN ENTRIES & ROOMS			102.1a	30	30	900	30	30	900	30	30	900			
b) BTWN BR AREA & LIV'G AREA			102.1b	30	30	900	30	30	900	30	30	900			
c) BTWN INDIVIDUAL RM's			102.1c	30	25	840	30	25	840	30	25	840			
d) BTWN BATH & OTHER RM's			102.1d	30	30	900	30	30	900	30	30	900			
2. VISUAL SUPERVISION (VISUAL CONNECTION)			102.2												
a) BTWN KITCHEN & FAMILY/PLAY ROOM			102.2a	30	30	900	30	30	900	30	30	900			
b) BTWN LIV'G AREA & YARD/BALCONY			102.2b	30	30	900	30	30	900	30	30	900			
c) BTWN KITCHEN & ENTRIES			102.2c	30	25	710	30	25	710	30	25	620			
3. VISUAL EXTENSION (VIEW)			102.3												
a) OF SKY, OPEN SPACE, ETC.			102.3a	30	25	690	30	25	690	30	25	640			
C. SUNLIGHT CONTROL:			103												
1. ADEQUATE SUNLIGHT (DIRECT OR INDIRECT) IN ALL HABITABLE RM's.			103.1	30	25	750	30	25	750	30	25	750			
D. AIR FRESHNESS (ODOR) CONTROL:			104												
1. NATURAL VENT FOR BR's & LIV'G AREA			104.1	30	25	840	30	25	840	30	25	840			
2. FORCED VENT FOR BATHS & KITCHEN			104.2	30	15	450	30	15	450	30	15	450			
E. WEATHER CONTROL:			105												
1. BTWN ENTRIES & LIV'G/KITCHEN AREA			105.1	30	25	690	30	25	690	30	25	690			
F. SECURITY:			106												
1. SECURITY CONSIDERATION ON ACCESS TO D.U.			106.1	30	15	450	30	15	450	30	15	450			
G. SAFETY:			107												
1. SAFETY CONSIDERATION ON ALL PHYSICAL ELEMENTS WITHIN EVERY DWELLING UNIT.			107.1	30	24	720	30	24	720	30	24	720			
H. ACCESSIBILITY (ABILITY TO ENTER & EXIT):			108												
1. EASY ACCESS TO RM's, BATHS, CLOSETS, STAIRS, ETC.			108.1	30	17	510	30	25	750	30	25	750			
2. TWO MEANS OF EGRESS FROM EACH DWELLING UNIT			108.2	30	30	900	30	30	900	30	30	900			
I. CIRCULATION (PASSAGE):			109												
1. BTWN MAIN/MINOR ENTRY & CLOSET/STORAGE			109.1	30	25	750	30	25	750	30	25	750			
2. BTWN MAIN/MINOR ENTRY & KITCHEN			109.2	30	15	450	30	15	450	30	15	450			
3. BTWN MAIN/MINOR ENTRY & LIV'G AREA			109.3	30	25	840	30	25	840	30	25	840			
4. BTWN MAIN/MINOR ENTRY & BR AREA			109.4	30	30	900	30	30	900	30	30	900			
5. BTWN KITCHEN & DIN'G/PLAY'G/FAMILY RM			109.5	30	30	900	30	30	900	30	30	900			
6. BTWN DIN'G & LIV'G AREA			109.6	30	15	450	30	15	450	30	15	450			
7. BTWN BATH & LIV'G/PLAY'G/FAMILY RM			109.7	30	15	450	30	15	450	30	15	450			
8. BTWN BR's & BATH			109.8	30	30	900	30	30	900	30	30	900			
9. BTWN MASTER BR & CHILDREN's BR's			109.9	30	25	840	30	25	840	30	17	540			
10. BTWN LIV'G/PLAY'G/FAMILY RM & YARD/BALCONY			109.10	30	30	900	30	30	900	30	30	900			
J. USEABILITY (FURNISHABILITY, CHANGEABILITY, DECORABILITY, ETC.):			110												
1. LIV'G RM			110.1	30	26	780	30	26	780	30	26	780			
2. FAMILY/PLAY'G RM			110.2	30	15	450	30	15	450	30	15	450			
3. DIN'G RM			110.3	30	17	510	30	17	510	30	17	510			
4. BR's			110.4	30	17	510	30	15	450	30	13	390			
5. BATH			110.5	30	13	390	30	13	390	30	13	390			
6. KITCHEN			110.6	30	25	840	30	23	690	30	15	450			
7. LAUNDRY			110.7	30	0	0	30	0	0	30	0	0			
8. STORAGE SPACES			110.8	30	17	510	30	15	450	30	13	390			
9. FOYER/VESTIBULE			110.9	30	15	450	30	15	450	30	15	450			
10. STAIRS			110.10	30	13	390	30	13	390	30	13	390			
11. WINDOWS			110.11	30	10	300	30	10	300	30	10	300			
12. DOORS			110.12	30	15	450	30	15	450	30	15	450			
13. BALCONY/YARD			110.13	30	23	690	30	23	690	30	23	690			
TOTAL -----				1290			1290			1290					
EFFICIENCY INDEX				22.55	22.55	22.55	22.55	22.55	22.55	22.55	22.55	22.55			
DESIGNER:															
EVALUATOR:															

V - VALUE (30 points for each)  
 R - RATE  
 S - SCORE (VALUE x RATE)  
 EFFICIENCY INDEX =  $\frac{\sum \text{SCORE}}{\sum \text{VALUE}}$







## 5b. A methodology for comprehensive evaluation

### 5b.1 COMPREHENSIVE EVALUATION

Analytic methods are most appropriately implemented by individuals in their own field of expertise. By devising a common terminology with an appropriate methodology, interdisciplinary communication and problem resolution is made possible. A more efficient process of cooperation among design professionals interested in housing, would have as one of its methods -- a well defined evaluation technique applicable to the design product.

It is our hypothesis that an efficient, flexible and informative evaluation technique can be devised which is easily comprehended by potential users, and is flexible enough to rationally incorporate their biases in a constructive manner. The technique should not be so cumbersome that it is difficult to use or understand, and when it is advantageous to do so, it should be adaptable to computer aided operation.



## 5b.2 EVALUATION MODEL

Since all design projects inevitably involve a mixture of objectives, both quantifiable and subjective, it is important to put the necessarily subjective criteria, such as social and psychological factors on an equal basis with 'hard criteria', such as sound separation or physical durability. Once a list of objectives has been formulated, it is then necessary to assign the method of evaluation to the relevant discipline or expertise. This method can allow for not only assigning relative weights and value judgments to an array of unequal criteria (which is almost always the case) but can also assign to the relevant discipline involved the final rating or scoring of the design product or project. For example; the answer to a specific criteria associated with elderly housing might be assigned to a sociologist who would employ field observation techniques in arriving at the rating associated with the actual problem.

Once the rating has been made, a summation or overall evaluation of all user-need criteria, such as; 'two bedroom dwelling units', or; one classification of criteria such as; 'elderly/psychological factors', can be expressed in the following model:

$$E_i = \frac{\sum (V_i)(R_i)}{\sum V_i}$$

where:  $E_i$  is the group evaluation, or the cumulative evaluation of separated criteria within a classification such as 'Elderly/Psychological'.

$R_i$  is the rating of the performance of the design in terms of the individual criteria.

$V_i$  is the value or relative weighting assigned to each individual criteria.

## 5b.3 DEFINITIONS OF THE SCORING TECHNIQUE

### Criteria Class

A set of criteria that have a clear underlying area of concern. These classes are established to illuminate aspects of the design which pose particular types of questions. Therefore, there can be classifications such as; psychology, economy, sociology, engineering, ecology, etc.

### Component

A class of objects or relationships containing one or more members, which is defined by the scorer and is distinguishable from all other components of the design. For example a component may be; 'a three-bedroom dwelling unit', 'all ground floor dwelling units', 'the relationship of dwelling units to dwelling units', or 'the site', (the relationship of buildings and landscape encompassed by the project boundaries.)

### Contextual Situation

A supposition of use, i.e., the number and kind of residents considered in the evaluation of a component.

### Item

Major categories of user-need criteria and their respective sub-categories, for example; 'B. Visual Control' is a major category, while; '1. Visual Privacy' and '2. Visual Supervision' are two of the sub-categories within it. These categories clearly indicate the objectives to be sought by the designer, and as such, they constitute the grounds upon which applicable physical solutions are judged.

### Value

A number from 0 to n, where n is a pre-defined maximum value or weight which may be awarded to the item being considered. It is used to give each item its proper relative importance within the context of the design component under evaluation. This co-factor is similar in concept to weighting factors commonly used elsewhere -- that is, whenever an understanding of the context in which the scoring is done clearly establishes certain items as being more important than others, then relative weighting factors are applied to the items accordingly so that the resulting formulation of scores yields a more accurate appraisal of the design.



### Rating

A number from 0 to k, where k equals the rating given to an item. The rating is the result of the scorer's subjective judgment of how well a design achieved the desired objectives as defined by the item. The range of numbers used to rate the performance of the design comprises an integer scale which serves to calibrate the response of the scorer.

### Index

$I_i$ , the product of the value (V or weighting factor) and the rating (R or score). This product is defined as the index for an item; i.e.,  $I_i = (R)(V)$

### Total

The sum of the indices of all items. This sum represents an evaluation in terms of a single component or classification of criteria within the overall design. (It may in some cases reflect an evaluation in terms of a defined contextual situation. For example; a 3-bedroom unit is a legitimate component, and the supposition that a 3-bedroom unit might be occupied by a couple with two to four children poses a contextual situation. This context would be distinct from one where, for instance a couple with two teenagers would inhabit the same kind of unit. Each context would require that certain criteria receive more attention, i.e., greater weight than other criteria.)

### Percent of Maximum Score

In an ideal situation, the maximum rating would be given to each item. Then:  $(V_i)(R_i) = I_i \text{ max.}$ , where  $I_i \text{ max.}$  would be the highest possible index for a particular item. The sum of all  $I_i \text{ max.}$  would yield a Maximum Total for that component. The ratio of the actual total evaluated to this theoretical maximum, yields a percentage which may be regarded as relative achievement. Subsequently, the same component of two different designs (or different components of the same design) could be compared purely in terms of performance.

Two examples of the use of all previously defined items are illustrated on the facing page. Example one, illustrates the same component with two different designs, example two, illustrates the same design with two different components.

## 5b.4 FORMAT FOR SCORING METHODOLOGY

Example One: Same Component, two different designs  
(7 is assumed to be the highest possible rating)

Item No.	Design 1			Design 2			I (max.)	R (max.)
	V	R	I	V	R	I		
1	3	7	21	3	6	18	21	
2	4	6	24	4	4	16	28	
3	7	2	14	7	3	21	49	
Total	14		59	14		55	98	
Overall R								
VR/ V			4.2			3.9		7.0
Percentage of Maximum								
			60.3%			56.1%		

Example Two: Same design, two different components

Item No.	Component 1				Component 2				Item No.
	V	R	I	I(max.)	V	R	I	I(max.)	
1	4	3	12	28	2	7	14	14	1
2	6	7	42	42	7	5	35	49	2
3	3	5	15	21	4	4	16	28	3
					9	5	45	63	4
					3	3	9	21	5
Total	13		69	91	25		119	175	
Overall R									
			5.3	(7 max.)			4.75	(7 max.)	
Percentage of maximum									
			76%				68%		



#### 5b.5 COMMENTS ON APPLICABILITY

The scoring technique which we have applied in the next two sections appear in two versions. The first uses a constant weighting system and a value range from 0 to 30. The second version adopts a flexible weighting system and a more restricted range of values for the rating scale, and is computer aided.

The techniques as thus far developed have been applied to both student designs and actual projects. Two projects from section 2a of this study; 'The North Harvard Middle Income Project', and the 'Charles Newtown Low Income Project', are scored by individual criteria and for overall component evaluation. Although the latter version of the scoring technique uses only a few of the components defined in the first version, all such components could be similarly considered. If one regards the categories and sub-categories of user-need criteria as a whole, one senses that it could be possible to locate a specific deficiency from the finest to the largest scale aspect of the project.

In both cases the real project is compared to the student design using the same site -- the important difference being that the student was operating from the theoretical viewpoint of a 'user-need' orientation. Both the North Harvard and Charles Newtown projects represent sophisticated handling of their respective programs, and were selected for comparison for that reason. Although it would have been easy to select projects which had a lower degree of correspondence to the user-need orientation of this study, it was felt that the subtle comparison of approaches rather than varying degrees of competence was in order. Hopefully, they reveal a clearer realization of what 'housing generated by user-needs' might really be.



## 5c. Comparative evaluation of projects: a computer aided scoring technique

Reasonable minds may differ as to whether techniques of this kind are valid or have substantial utility. The problem of deriving criteria is itself, extraordinary and unique for each design task undertaken. Even assuming a consensus on the objectivity of the criteria, the rigidity of the examination may outweigh the benefit of having such standards. At this point, even the most careful and modest effort cannot forestall controversy.

The second version of the scoring technique runs closer to the original objectives of clarity and flexibility. It stems from the same theoretical ground as the first version. The abbreviated criteria statements in the computer output correspond to the list of items under "Evaluation of Dwelling Units"; and the variables, i.e., value, rate, index, overall evaluation, maximum evaluation (maximum score), and relative performance (percent of maximum score) have already been described in the scoring definitions. In both versions, it remains for the scorer to use his own judgment in evaluating the design in issue. However, if one wishes to be as extensive in scoring as was demonstrated in the evaluation of "North Harvard", then the advantage of having the computer do the subsequent calculations becomes obvious.

With regard to the numbers used, we adopted the convention of assigning four possible increments to each criteria item, and six possible increments for rating. The labels associated with each of the numbers is given in the table below.

### VALUE AND RATING LABELS

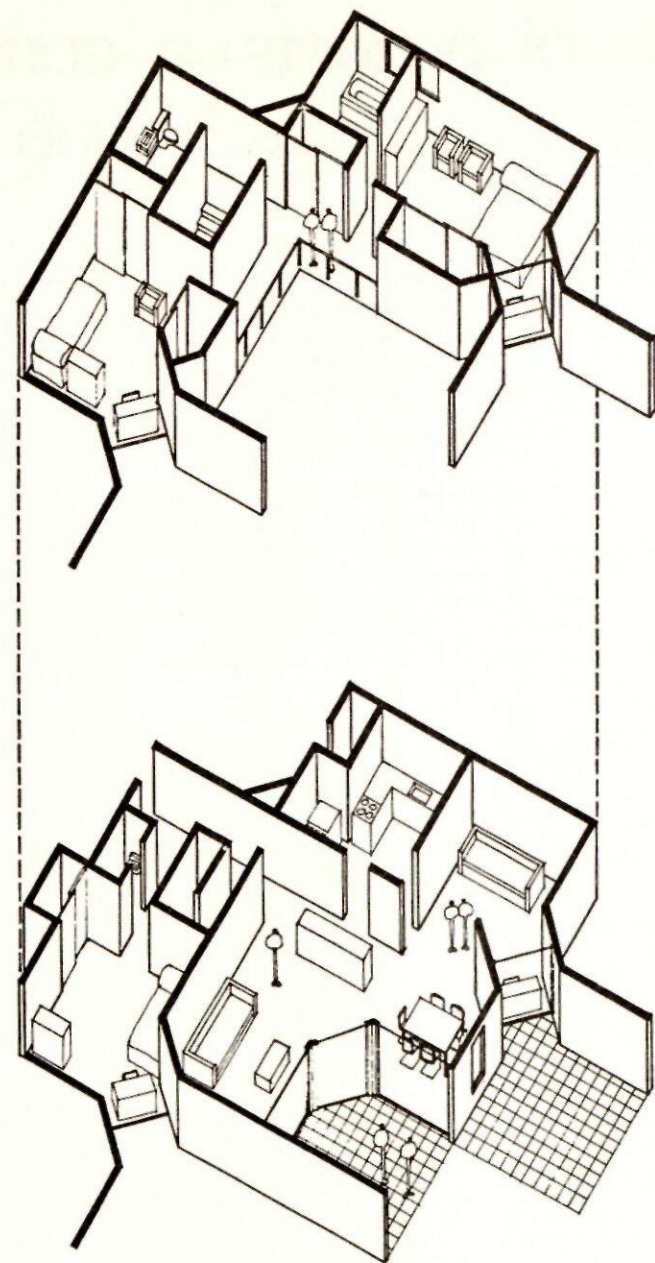
#### VALUES

- 2 OF MARGINAL USE OR BENEFIT
- 4 ADVANTAGEOUS BUT NOT CRUCIAL
- 7 FAIRLY IMPORTANT
- 10 ABSOLUTELY NECESSARY

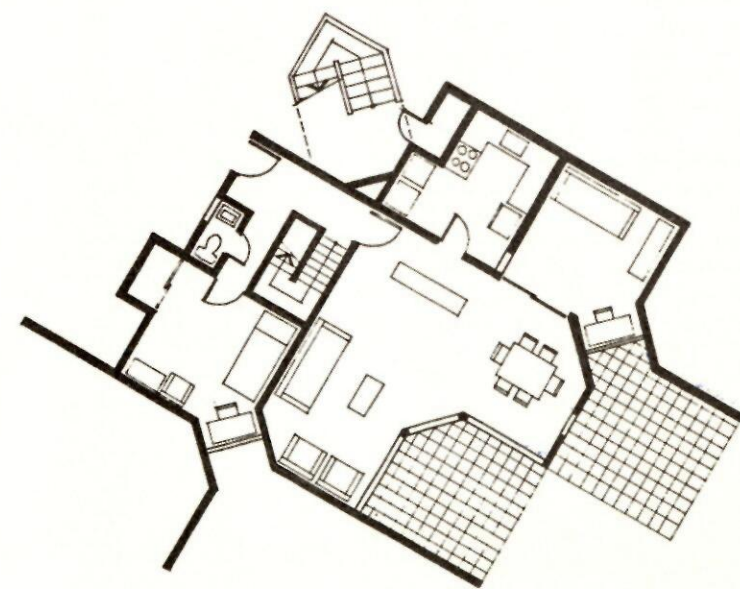
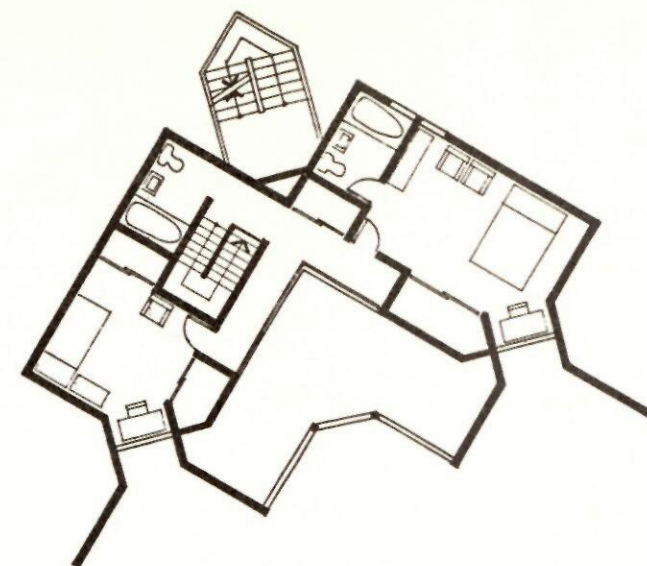
#### RATINGS

- 0 NOT PRESENT, NOT EASILY ACCOMMODATED
- 1 NOT PRESENT, BUT CAN BE ACCOMMODATED
- 2 NOT PRESENT, BUT EASILY ACCOMMODATED
- 3 PRESENT, BUT INSUFFICIENT
- 4 PRESENT, BUT MINIMALLY USEFUL
- 5 PRESENT AND QUITE USABLE
- 6 PRESENT AND EXCELLENT





Three bedroom unit isometric



First and second floor plans

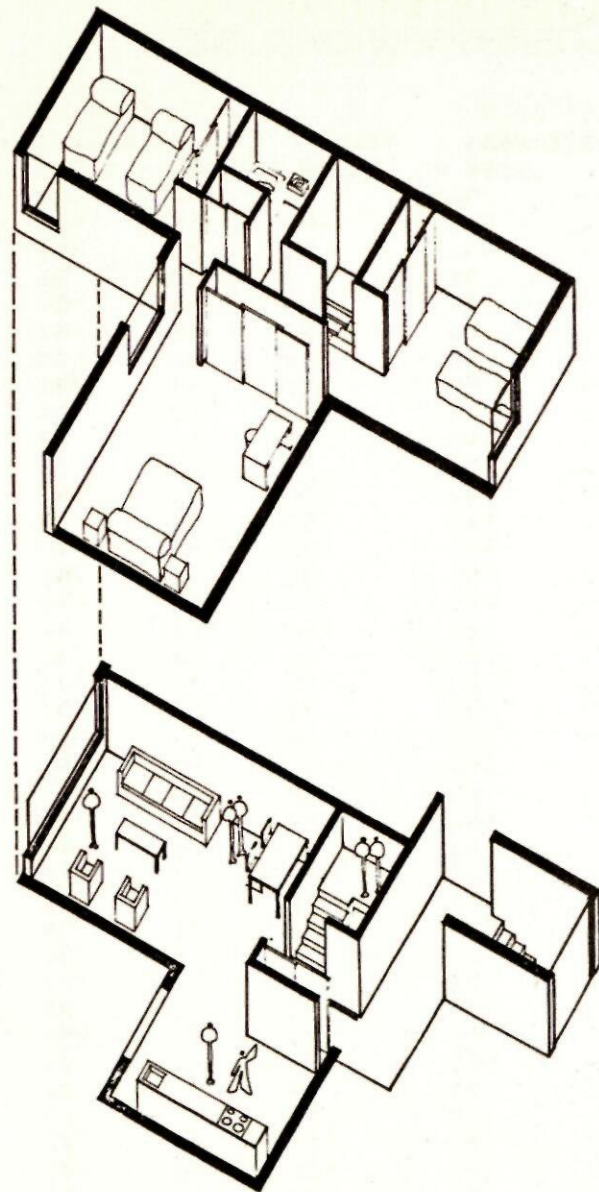


EVALUATION PROGRAM HOUSING STUDY  
SCHEME 1  
DWELLING UNITS

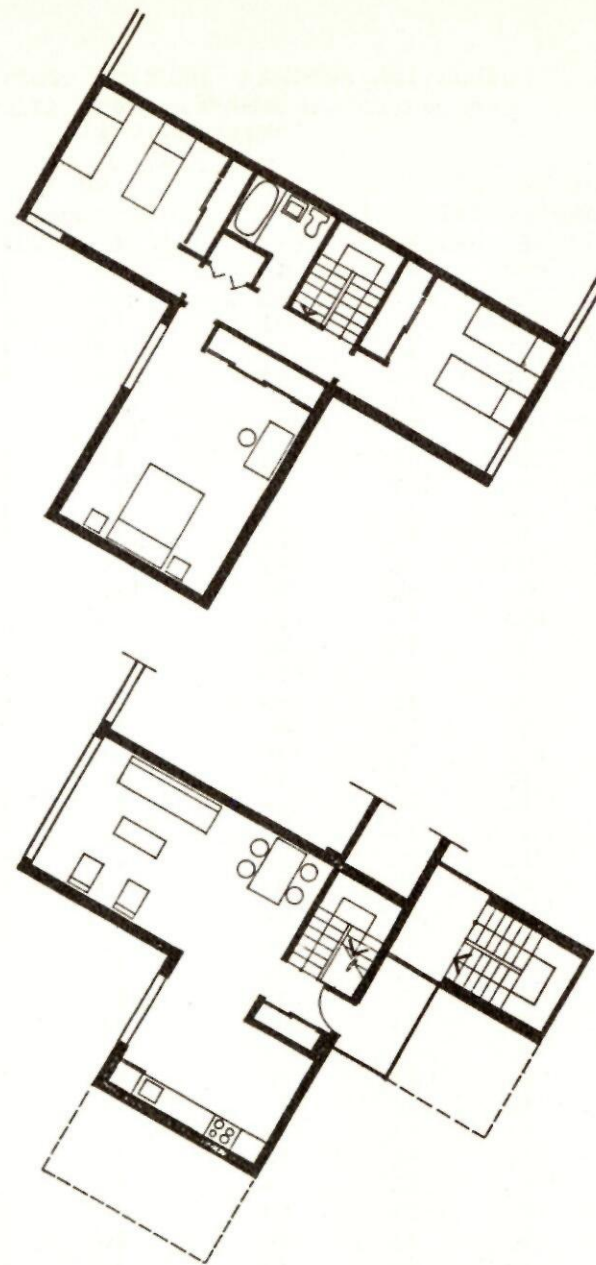
Prototype two - Charlesnewtown site

	ONE BED RM			TWO BED RM			THREE BDRM			FOUR BEDRM		
	VALUE	RATE	INDEX	VALUE	RATE	INDEX	VALUE	RATE	INDEX	VALUE	RATE	INDEX
1 EACH RM SPACE ACCOUSTICS	7	5	35	7	3	21	10	5	50	10	3	30
2 BETWEEN BEDROOMS & BATH	4	4	16	4	4	16	4	4	16	4	4	16
3 BTWN BR AREA & LR-DR-KIT	4	3	12	7	3	21	10	3	30	10	3	30
4 BETWEEN FLOORS	0	3	0	7	3	21	7	3	21	7	3	21
5 VIS PRI BTWN ENT & ROOMS	4	6	24	4	6	24	4	6	24	4	6	24
6 BTWN BR AREA & LIVG AREA	7	5	35	10	5	50	10	5	50	10	5	50
7 BETWEEN INDIVIDUAL ROOMS	10	3	30	10	3	30	10	3	30	10	3	30
8 BTWN BATH & UTHR ROOMS	10	5	50	10	5	50	10	5	50	10	5	50
9 VIS CON BTWN KIT & FAMRM	4	2	8	7	2	14	7	2	14	7	2	14
10 BTWN LIV & YARD/BALCONY	4	6	24	10	6	60	10	6	60	10	6	60
11 BTWN KIT & ENTRIES	4	4	16	4	4	16	4	4	16	4	4	16
12 VIEW OF SKY SPACE ETC.	7	6	42	7	6	42	7	6	42	7	6	42
13 SUNLIGHT IN ALL ROOMS	10	6	60	10	6	60	10	6	60	10	6	60
14 NAT VENT BDRM & LIV AREA	10	5	50	10	5	50	10	5	50	10	5	50
15 MECH VENT IN BATHS & KIT	10	5	50	10	5	50	10	5	50	10	5	50
16 WEATHER CONTR AT ENTRIES	4	4	16	4	0	0	4	4	16	4	0	0
17 SECURITY ON ACCESS TO DU	10	6	60	10	6	60	10	6	60	10	6	60
18 SAFETY OF DESGN ELEMENTS	10	4	40	10	4	40	10	4	40	10	4	40
19 ACCESS TO RMS STAIRS ETC	4	5	20	4	5	20	4	5	20	4	5	20
20 TWO MEANS OF EGRESS	10	3	30	10	3	30	10	3	30	10	3	30
21 CIRC BTWN ENT & CLU/STOR	4	5	20	4	5	20	4	5	20	4	5	20
22 CIRC BTWN ENT & KITCHEN	7	2	14	7	2	14	7	2	14	7	2	14
23 CIRC BTWN ENT & LIV AREA	4	4	16	4	4	16	4	4	16	4	4	16
24 CIRC BTWN ENT & BR AREA	7	6	42	7	6	42	7	6	42	7	6	42
25 BTWN KIT/DIN/PLAY/FAM RM	4	6	24	4	6	24	4	6	24	4	6	24
26 BTWN DINING & LIVING AREA	2	5	10	2	5	10	2	5	10	2	5	10
27 BTWN BATH & LIV/PLAY/FAM	4	3	12	4	3	12	4	3	12	4	3	12
28 CIRC BTWN BDRMS & BATH	7	5	35	7	5	35	7	5	35	7	5	35
29 BTWN M-BR & CHILDRENS BR	0	0	0	2	3	6	4	3	12	4	3	12
30 BTWN LIV/PLAY/FAM & YARD	2	4	8	7	4	28	7	4	28	7	4	28
31 FURNISHABILITY OF LIV RM	10	2	20	10	2	20	10	2	20	10	2	20
32 OF FAMILY / PLAY ROOM	10	5	50	10	5	50	10	5	50	10	5	50
33 OF DINING ROOM	7	4	28	4	4	16	4	4	16	4	4	16
34 OF BEDROOMS	4	5	20	4	5	20	4	5	20	4	5	20
35 USABILITY OF BATHS	2	4	8	2	4	8	2	4	8	2	4	8
36 OF KITCHENS	4	3	12	4	3	12	4	3	12	4	3	12
37 OF LAUNDRY	10	2	20	10	2	20	10	2	20	10	2	20
38 USABILITY OF STOR SPACES	10	3	30	10	3	30	10	3	30	10	3	30
39 OF FOYER/VESTIBULE	2	6	12	4	6	24	4	6	24	4	6	24
40 OF STAIRS	4	4	16	4	4	16	4	4	16	4	4	16
41 OF WINDOWS	2	4	8	2	4	8	2	4	8	2	4	8
42 OF DOORS	10	4	40	10	4	40	10	4	40	10	4	40
43 OF BALCONY AND/OR YARD	7	6	42	7	6	42	7	6	42	7	6	42
EVALUATION			4.3			4.2			4.3			4.2
AVGE VALUE			6.0			6.6			6.8			6.8
MAX EVALN			6.0			6.0			6.0			6.0
REL PERFORMANCE			71.9			69.7			71.2			69.2





Three bedroom unit isometric



First and second level plans

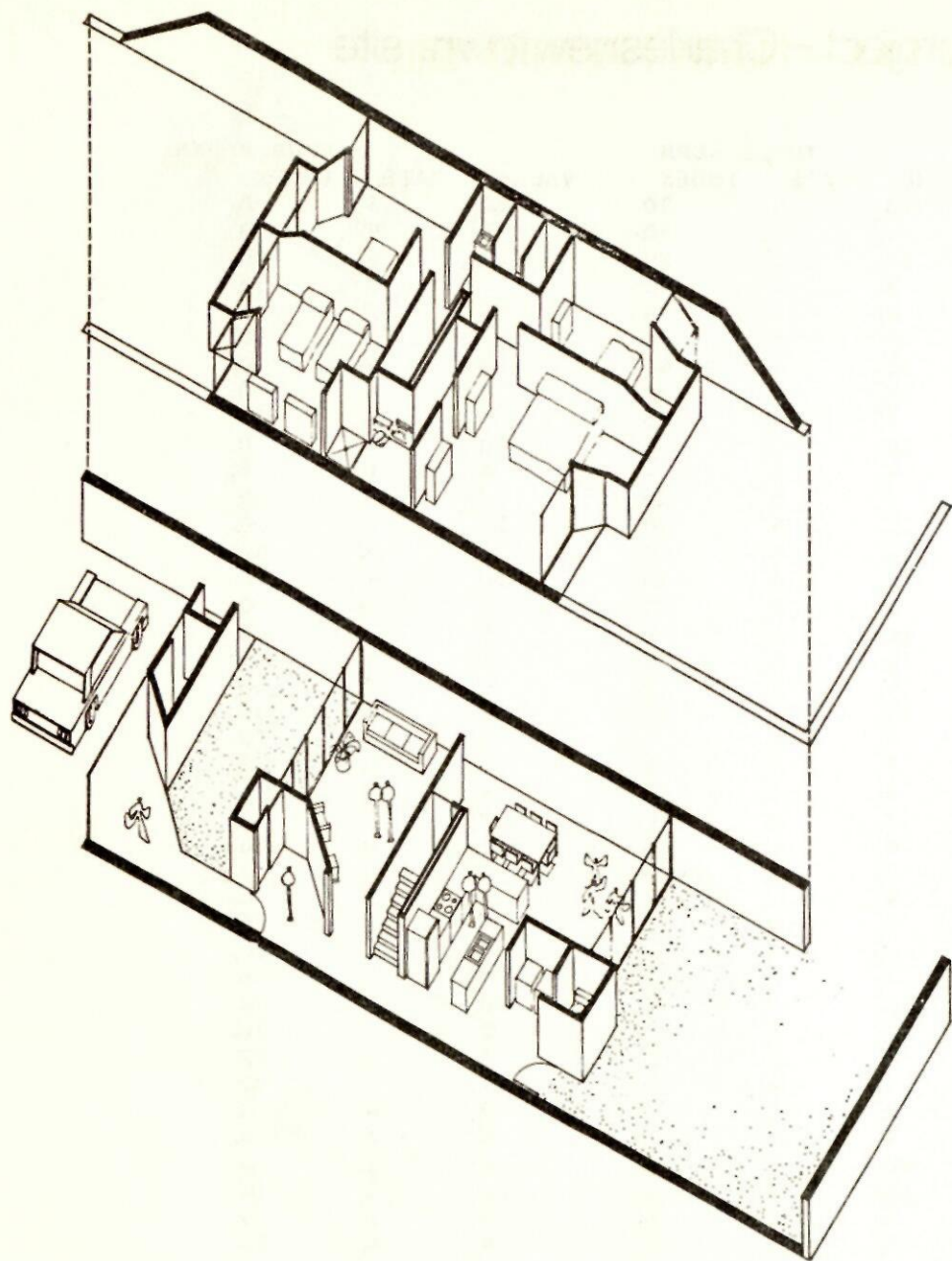


EVALUATION PROGRAM HOUSING STUDY  
SCHEME 2  
DWELLING UNITS

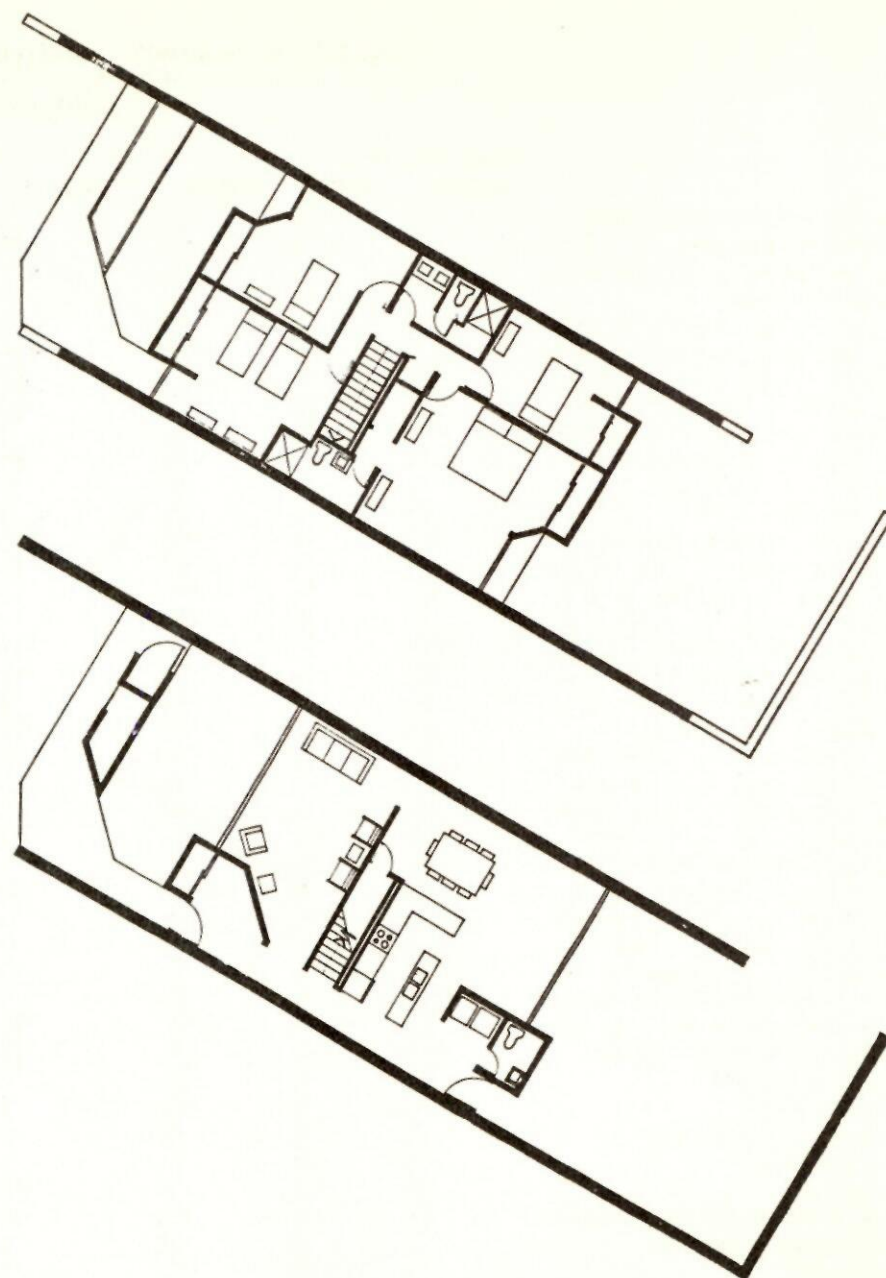
Existing project - Charlesnewtown site

	ONE BD RM			TWO BD RM			THREE BDRM			FOUR BEDRM		
	VALUE	RATE	INDEX	VALUE	RATE	INDEX	VALUE	RATE	INDEX	VALUE	RATE	INDEX
1 EACH RM SPACE ACCOUSTICS	7	3	21	7	3	21	10	3	30	10	3	30
2 BETWEEN BEDROOMS & BATH	4	5	20	4	5	20	4	5	20	4	5	20
3 BTWN BR AREA & LR-DR-KIT	4	7	28	7	5	35	10	5	50	10	5	50
4 BETWEEN FLOORS	0	0	0	7	5	35	7	5	35	7	5	35
5 VIS PRI BTWN ENT & ROOMS	4	1	4	4	1	4	4	1	4	4	1	4
6 BTWN BR AREA & LIVG AREA	7	6	42	10	6	60	10	6	60	10	6	60
7 BETWEEN INDIVIDUAL ROOMS	10	4	40	10	4	40	10	4	40	10	4	40
8 BTWN BATH & OTHER ROOMS	10	4	40	10	4	40	10	4	40	10	4	40
9 VIS CON BTWN KIT & FAMRM	4	4	16	7	4	28	7	4	28	7	4	28
10 BTWN LIV & YARD/BALCONY	4	0	0	10	0	0	10	0	0	10	0	0
11 BTWN KIT & ENTRIES	4	1	4	4	1	4	4	1	4	4	1	4
12 VIEW OF SKY SPACE ETC.	7	5	35	7	5	35	7	5	35	7	5	35
13 SUNLIGHT IN ALL ROOMS	10	6	60	10	6	60	10	6	60	10	6	60
14 NAT VENT BDRM & LIV AREA	10	6	60	10	6	60	10	6	60	10	6	60
15 MECH VENT IN BATHS & KIT	10	4	40	10	4	40	10	4	40	10	4	40
16 WEATHER CONTR AT ENTRIES	4	5	20	4	5	20	4	5	20	4	5	20
17 SECURITY ON ACCESS TO DU	10	2	20	10	2	20	10	2	20	10	2	20
18 SAFETY OF DESGN ELEMENTS	10	4	40	10	4	40	10	4	40	10	4	40
19 ACCESS TO RMS STAIRS ETC	4	5	20	4	5	20	4	5	20	4	5	20
20 TWO MEANS OF EGRESS	10	3	30	10	3	30	10	3	30	10	3	30
21 CIRC BTWN ENT & CLO/STOR	4	5	20	4	5	20	4	5	20	4	5	20
22 CIRC BTWN ENT & KITCHEN	7	5	35	7	5	35	7	5	35	7	5	35
23 CIRC BTWN ENT & LIV AREA	4	4	16	4	4	16	4	4	16	4	4	16
24 CIRC BTWN ENT & BR AREA	7	6	42	7	6	42	7	6	42	7	6	42
25 BTWN KIT/DIN/PLAY/FAM RM	4	4	16	4	4	16	4	4	16	4	4	16
26 BTWN DIN & LIVING AREA	2	4	8	2	4	8	2	4	8	2	4	8
27 BTWN BATH & LIV/PLAY/FAM	4	0	0	4	0	0	4	0	0	4	0	0
28 CIRC BTWN BDRMS & BATH	7	5	35	7	5	35	7	5	35	7	5	35
29 BTWN M-BR & CHILDRENS BR	0	0	0	2	5	10	4	5	20	4	5	20
30 BTWN LIV/PLAY/FAM & YARD	2	5	10	7	5	35	7	5	35	7	5	35
31 FURNISHABILITY OF LIV RM	10	4	40	10	4	40	10	4	40	10	4	40
32 OF FAMILY / PLAY ROOM	10	3	30	10	3	30	10	3	30	10	3	30
33 OF DINING ROOM	7	3	21	4	3	12	4	3	12	4	3	12
34 OF BEDROOMS	4	6	24	4	6	24	4	6	24	7	6	42
35 USABILITY OF BATHS	2	4	8	2	4	8	2	4	8	2	4	8
36 OF KITCHENS	4	2	8	4	2	8	4	2	8	4	2	8
37 OF LAUNDRY	10	0	0	10	0	0	10	0	0	10	0	0
38 USABILITY OF STOR SPACES	10	3	30	10	3	30	10	3	30	10	3	30
39 OF FOYER/VESTIBULE	2	1	2	4	1	4	4	1	4	4	1	4
40 OF STAIRS	4	4	16	4	4	16	4	4	16	4	4	16
41 OF WINDOWS	2	4	8	2	4	8	2	4	8	2	4	8
42 OF DOORS	10	4	40	10	4	40	10	4	40	10	4	40
43 OF BALCONY AND/OR YARD	7	6	42	7	6	42	7	6	42	7	6	42
EVALUATION			3.9			3.8			3.9			3.9
AVGE VALUE			6.0			6.6			6.8			6.9
MAX EVALN			6.0			6.0			6.0			6.0
REL PERFORMANCE			64.5			64.0			64.2			64.6





Four bedroom unit isometric



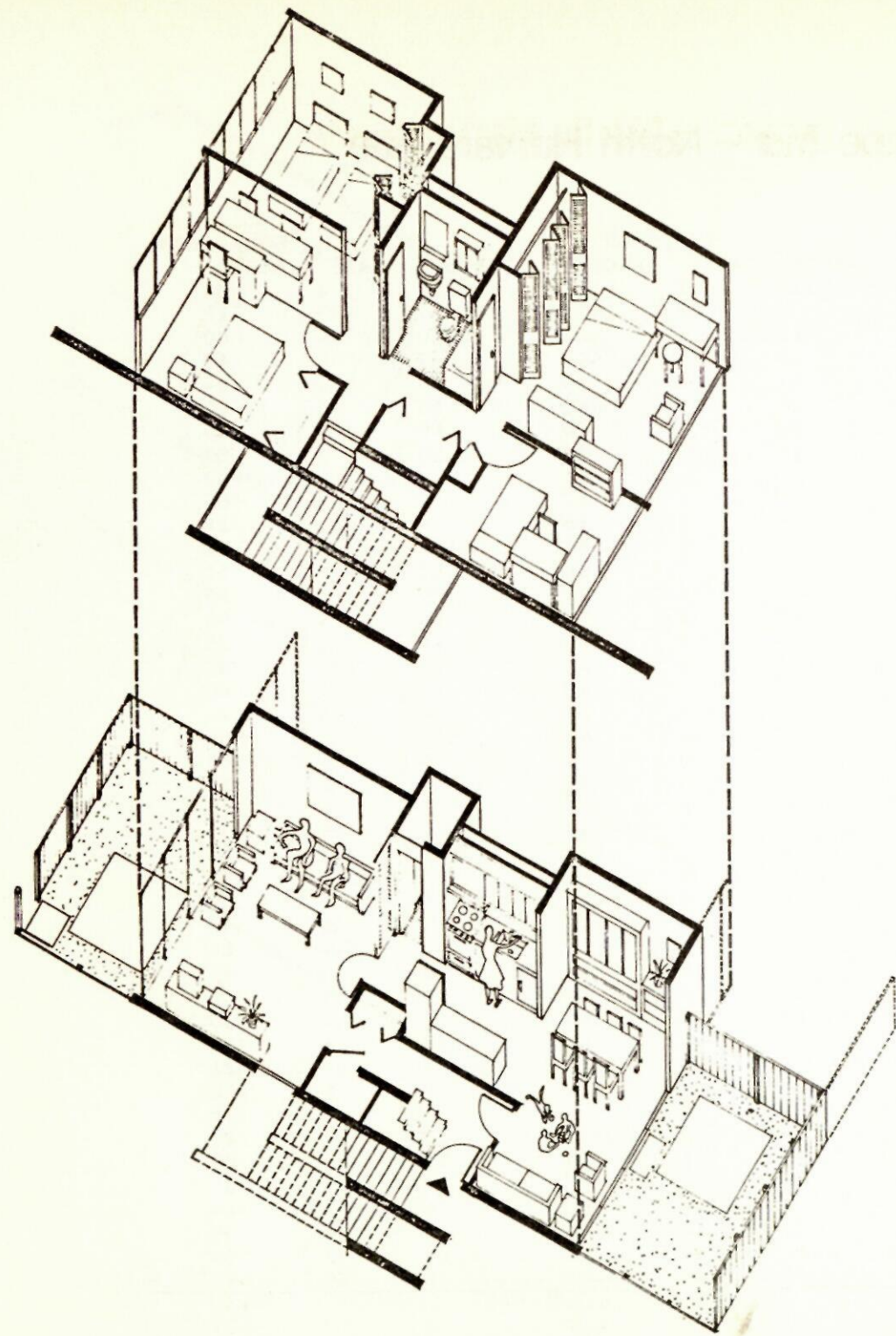
First and second level plans



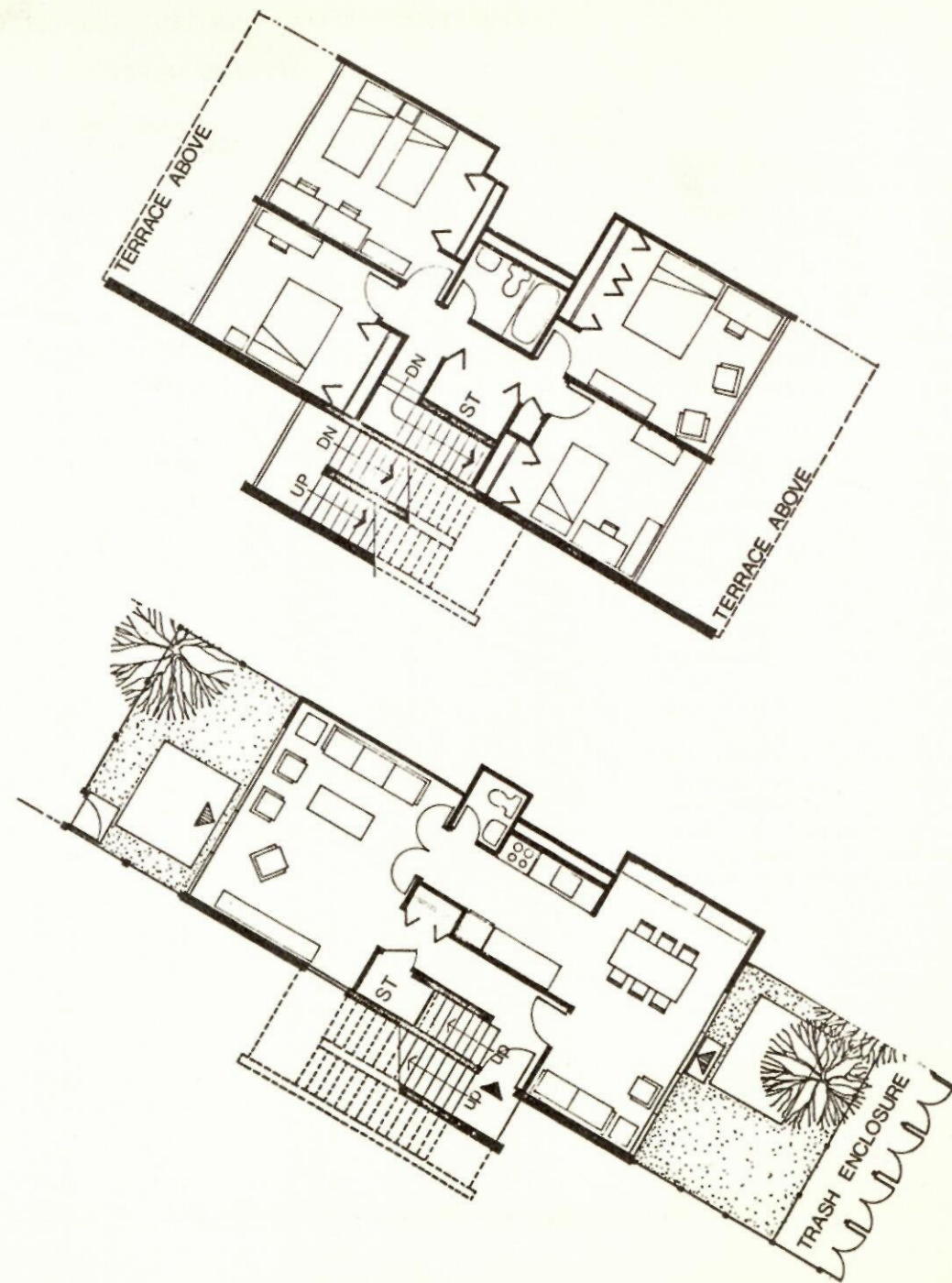
EVALUATION PROGRAM HOUSING STUDY Prototype four - North Harvard site  
 SCHEME 1  
 DWELLING UNITS

	ONE BED RM			TWO BED RM			THREE BDRM			FOUR BEDRM		
	VALUE	RATE	INDEX	VALUE	RATE	INDEX	VALUE	RATE	INDEX	VALUE	RATE	INDEX
1 EACH RM SPACE ACCOUSTICS	7	6	42	7	2	14	10	2	20	10	2	20
2 BETWEEN BEDROOMS & BATH	4	4	16	4	4	16	4	3	12	4	3	12
3 BTWN BR AREA & LR-DR-KIT	4	6	24	7	6	42	10	6	60	10	6	60
4 BETWEEN FLOORS	0	0	0	7	6	42	7	7	49	7	6	42
5 VIS PRI BTWN ENT & ROOMS	4	6	24	4	6	24	4	6	24	4	6	24
6 BTWN BR AREA & LIVG AREA	7	6	42	10	6	60	10	6	60	10	6	60
7 BETWEEN INDIVIDUAL ROOMS	10	2	20	10	2	20	10	2	20	10	2	20
8 BTWN BATH & OTHER ROOMS	10	5	50	10	5	50	10	5	50	10	5	50
9 VIS CON BTWN KIT & FAMRM	4	6	24	7	6	42	7	6	42	7	6	42
10 BTWN LIV & YARD/BALCONY	4	6	24	10	6	60	10	6	60	10	6	60
11 BTWN KIT & ENTRIES	4	1	4	4	4	16	4	4	16	4	4	16
12 VIEW OF SKY SPACE ETC.	7	6	42	7	6	42	7	6	42	7	6	42
13 SUNLIGHT IN ALL ROOMS	10	5	50	10	5	50	10	5	50	10	5	50
14 NAT VENT BDRM & LIV AREA	10	5	50	10	5	50	10	5	50	10	5	50
15 MECH VENT IN BATHS & KIT	10	5	50	10	5	50	10	5	50	10	5	50
16 WEATHER CONTR AT ENTRIES	4	5	20	4	5	20	4	5	20	4	5	20
17 SECURITY ON ACCESS TO DU	10	3	30	10	3	30	10	3	30	10	3	30
18 SAFETY OF DESGN ELEMENTS	10	4	40	10	4	40	10	4	40	10	4	40
19 ACCESS TO RMS STAIRS ETC	4	6	24	4	6	24	4	6	24	4	6	24
20 TWO MEANS OF EGRESS	10	6	60	10	6	60	10	6	60	10	6	60
21 CIRC BTWN ENT & CLO/STOR	4	6	24	4	6	24	4	6	24	4	5	20
22 CIRC BTWN ENT & KITCHEN	7	5	35	7	5	35	7	5	35	7	5	35
23 CIRC BTWN ENT & LIV AREA	4	5	20	4	5	20	4	5	20	4	5	20
24 CIRC BTWN ENT & BR AREA	7	5	35	7	5	35	7	5	35	7	5	35
25 BTWN KIT/DIN/PLAY/FAM RM	4	6	24	4	6	24	4	6	24	4	6	24
26 BTWN DIN & LIVING AREA	2	5	10	2	5	10	2	5	10	2	5	10
27 BTWN BATH & LIV/PLAY/FAM	4	5	20	4	1	4	4	5	20	4	5	20
28 CIRC BTWN BDRMS & BATH	7	6	42	7	6	42	7	6	42	7	6	42
29 BTWN M-BR & CHILDRENS BR	2	4	8	2	4	8	4	4	16	4	4	16
30 BTWN LIV/PLAY/FAM & YARD	3	6	18	7	6	42	7	6	42	7	6	42
31 FURNISHABILITY OF LIV RM	10	3	30	10	3	30	10	3	30	10	3	30
32 OF FAMILY / PLAY ROOM	10	3	30	10	3	30	10	3	30	10	3	30
33 OF DINING ROOM	7	4	28	4	4	16	4	4	16	4	4	16
34 OF BEDROOMS	4	3	12	4	3	12	4	3	12	7	3	21
35 USABILITY OF BATHS	2	5	10	2	4	8	2	6	12	2	6	12
36 OF KITCHENS	4	4	16	4	4	16	4	2	8	4	2	8
37 OF LAUNDRY	10	0	0	10	2	20	10	2	20	10	2	20
38 USABILITY OF STOR SPACES	10	2	20	10	2	20	10	2	20	10	2	20
39 OF FOYER/VESTIBULE	2	6	12	4	6	24	4	6	24	4	6	24
40 OF STAIRS	4	4	16	4	4	16	4	4	16	4	4	16
41 OF WINDOWS	2	4	8	2	4	8	2	4	8	2	4	8
42 OF DOORS	10	5	50	10	5	50	10	5	50	10	5	50
43 OF BALCONY AND/OR YARD	7	6	42	7	6	42	7	6	42	7	6	42
EVALUATION			4.4			4.5			4.6			4.5
AVGE VALUE			6.0			6.6			6.8			6.9
MAX EVALN			6.0			6.0			6.0			6.0
REL PERFORMANCE			73.7			75.6			76.2			75.3





Four bedroom unit isometric



First and second level plans



EVALUATION PROGRAM HOUSING STUDY  
SCHEME 2  
DWELLING UNITS

Existing project - North Harvard site

	ONE BD RM			TWO BD RM			THREE BDRM			FOUR BEDRM		
	VALUE	RATE	INDEX	VALUE	RATE	INDEX	VALUE	RATE	INDEX	VALUE	RATE	INDEX
1 EACH RM SPACE ACCOUSTICS	7	5	35	7	5	35	10	5	50	10	4	40
2 BETWEEN BEDROOMS & BATH	4	3	12	4	5	20	4	6	24	4	6	24
3 BTWN BR AREA & LR-DR-KIT	4	5	20	7	6	42	10	6	60	10	6	60
4 BETWEEN FLOORS	0	0	0	7	6	42	7	6	42	7	6	42
5 VIS PRI BTWN ENT & ROOMS	4	3	12	4	2	8	4	6	24	4	6	24
6 BTWN BR AREA & LIVG AREA	7	5	35	10	6	60	10	6	60	10	3	30
7 BETWEEN INDIVIDUAL ROOMS	0	0	0	10	6	60	10	6	60	10	3	30
8 BTWN BATH & OTHER ROOMS	10	3	30	10	6	60	10	6	60	10	6	60
9 VIS CON BTWN KIT & FAMRM	0	0	0	7	5	35	7	6	42	7	6	42
10 BTWN LIV & YARD/BALCONY	4	6	24	10	6	60	10	6	60	10	6	60
11 BTWN KIT & ENTRIES	4	3	12	4	5	20	4	4	16	4	4	16
12 VIEW OF SKY SPACE ETC.	7	5	35	7	5	35	7	5	35	7	5	35
13 SUNLIGHT IN ALL ROOMS	10	5	50	10	5	50	10	5	50	10	5	50
14 NAT VENT BDRM & LIV AREA	10	6	60	10	6	60	10	6	60	10	6	60
15 MECH VENT IN BATHS & KIT	10	3	30	10	3	30	10	3	30	10	3	30
16 WEATHER CONTR AT ENTRIES	4	4	16	4	4	16	4	4	16	4	4	16
17 SECURITY ON ACCESS TO DU	10	2	20	10	2	20	10	2	20	10	2	20
18 SAFETY OF DESGN ELEMENTS	10	2	20	10	2	20	10	5	50	10	5	50
19 ACCESS TO RMS STAIRS ETC	4	5	20	4	3	12	4	3	12	4	3	12
20 TWO MEANS OF EGRESS	10	6	60	10	6	60	10	6	60	10	6	60
21 CIRC BTWN ENT & CLO/STOR	4	2	8	4	2	8	4	5	20	4	5	20
22 CIRC BTWN ENT & KITCHEN	7	3	21	7	3	21	7	3	21	7	3	21
23 CIRC BTWN ENT & LIV AREA	4	4	16	4	2	8	4	6	24	4	6	24
24 CIRC BTWN ENT & BR AREA	7	3	21	7	6	42	7	6	42	7	6	42
25 BTWN KIT/DIN/PLAY/FAM RM	4	5	20	4	6	24	4	6	24	4	6	24
26 BTWN DINING & LIVING AREA	4	3	12	4	2	8	4	2	8	4	3	12
27 BTWN BATH & LIV/PLAY/FAM	7	6	42	7	6	42	7	6	42	7	6	42
28 CIRC BTWN BDRMS & BATH	0	0	0	2	5	10	4	6	24	4	4	16
29 BTWN M-BR & CHILDRENS BR	2	3	6	7	6	42	7	6	42	7	6	42
30 BTWN LIV/PLAY/FAM & YARD	10	5	50	10	5	50	10	5	50	10	5	50
31 FURNISHABILITY OF LIV RM	0	0	0	10	3	30	10	5	50	10	3	30
32 OF FAMILY / PLAY ROOM	10	2	20	4	2	8	4	2	8	4	3	12
33 OF DINING ROOM	7	3	21	4	3	12	4	3	12	7	3	21
34 OF BEDROOMS	4	7	28	2	3	6	2	2	4	2	3	6
35 USABILITY OF BATHS	2	6	12	4	6	24	4	5	20	4	4	16
36 OF KITCHENS	0	0	0	10	0	0	10	0	0	10	0	0
37 OF LAUNDRY	10	5	50	10	3	30	10	3	30	10	3	30
38 USABILITY OF STOR SPACES	2	1	2	4	3	12	4	3	12	4	3	12
39 OF FOYER/VESTIBULE	0	0	0	4	3	12	4	3	12	4	3	12
40 OF STAIRS	2	3	6	2	3	6	2	3	6	2	3	6
41 OF WINDOWS	10	3	30	10	3	30	10	3	30	10	3	30
42 OF DOORS	7	5	35	7	5	35	7	5	35	7	5	35
43 OF BALCONY AND/OR YARD	7	6	42	7	6	42	7	6	42	7	6	42
EVALUATION			4.1			4.3			4.7			4.4
AVGE VALUE			5.3			6.7			6.9			7.0
MAX EVALN			6.0			6.0			6.0			6.0
REL PERFORMANCE			67.9			71.9			77.9			72.6



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## 6. Remarks on the process and suggestions for further study

Aside from gathering data and compiling statistics on comparative housing our study places emphasis on two processes integral to the design of housing. They are: 1) the translation of sociological data (user-needs) into physical form, and 2) an evaluation or scoring system relating value judgments to an objective testing of design proposals. Architects designing housing as well as agencies administering the process are increasingly aware of the need to translate an array of complex requirements, all of which effect the ultimate user. Rather than rely on a static guide book of standards our proposal suggests a dynamic system of changing user-needs, weighted as to relative importance and specifically suited to the project at hand. Relative values or weights associated with discrete user-need requirements can be assigned by the specialized discipline most concerned, or by mutual interdisciplinary agreement. The translation process, when the designers work is most often inscrutable to the client, can be made clear by showing the evolution from verbal message, through conceptual diagram, to built form resolution. More importantly the system does not hinder the designers freedom to explore a variety of alternative solutions or an unusually complex or subtle resolution to the problem. Explicit criteria with inflexible, limited 'lists' of options often do. Our purpose has fundamentally been to make clear the process of design.

The quantitative system of evaluation that we have proposed can be used to evaluate the progress of design as well as its final form. Constant adjustments are required to insure that the interactive dynamic of number scores do not magnify or obscure an overall balance to project design. The system does provide for the inclusion of many points of view in the entire process. It can allow for active participation on a clearly understandable basis for many non-designers who should be included in the process. Moreover, participation can come at the right time during the sequence from program to actuality; during the writing of the programmatic elements, review of design alternatives or finished project evaluation, depending on the purpose. So often participation by the user is limited to a post-mortem of what is already committed, or even worse, the method of participation is ill-defined causing alienation and decreasing the possibility for rapport between the users and the providers of human environment.







## 7. Glossary of housing terminology

- A. LOW-RENT PUBLIC HOUSING AND OTHER FEDERALLY AIDED PROGRAMS
- B. HUD/FHA PROGRAMS FOR VARIED TYPES AND DENSITIES OF MULTIFAMILY HOUSING
- C. TYPES OF OWNERSHIP IN REAL PROPERTY
- D. FINANCE TERMINOLOGY (HOUSING-CONSTRUCTION/BUILDING)
- E. BUILDING TYPES
- F. GENERAL CONSTRUCTION/BUILDING TERMINOLOGY



## A. Low-rent public housing and other federally aided programs

1. Housing Authority: Usually referred to as Local Housing Authority (LHA). A Local Housing Authority is a public body, generally corporate, empowered to develop, manage and operate public housing for low-income families, to clear slums in connection therewith, to issue bonds, and in general to function as the operating unit of a city, county, or state in carrying out a public-housing program.

Local housing authorities are not federal bodies; they are created by state laws. Within the general guidelines set by the federal public housing laws and HUD's administrative regulations, local housing authorities have much room for constructive action. They, not HUD, plan projects, set income limits and rents, determine specific criteria for admission to public housing, and issue other administrative regulations.

2. Low-Rent Public Housing Programs: The Low-Rent Public Housing Program (operated by local housing authorities) is designed to help provide safe, decent, and sanitary housing for low-income families at rents they can afford.

Financial and technical assistance is provided by HUD to local housing authorities to plan, build and/or acquire, own, and operate low-rent public housing projects. The local housing authority issues tax-exempt, federally guaranteed bonds to finance these costs and then receives an annual federal contribution toward each year's payment of debt service (principal and interest) on the bonds.

The local housing authority provides housing in various ways--by construction, by rehabilitation of existing structures, by purchase from private developers or builders (the Turnkey Process), and then rents these dwellings to low-income families. Special provisions allow for the purchase of such housing by low-income families under a variety of homeownership programs.

3. Turnkey Process: The Turnkey Process, started by the Department of Housing and Urban Development on an experimental basis in January of 1966, permits a local public housing authority to enter into a commitment to eventually purchase a housing project (land and buildings) from a private developer who will build the project in accordance with plans approved by the authority.

4. Rent Supplement Program: The rent supplement program enables low-income families to rent new and rehabilitated housing financed with the assistance of the Federal Housing Administration (FHA).

The sponsor of a housing project applies to FHA for rent supplement payments (for up to 40 years) on behalf of future tenants in its development. Once the sponsor receives its FHA commitment, it can rent to tenants with incomes lower than would otherwise be possible.

Federal rent supplements are made to sponsor/owners of certain housing projects in payments equivalent to the difference between

25 percent of a tenant's income and the fair market rental for the unit he occupies.

As a tenant's income changes, the rent supplement is increased or decreased accordingly. If his income rises to the point where he can pay full rent, he may continue living in the same unit without rent supplement.

5. Workable Program for Community Improvement: Commonly referred to as a "Workable Program." Refers to an official plan of community action which is prerequisite for certain Federal aids to the community.

A community's plan for action, involving public and private resources to eliminate slums, prevent blight, and foster local development, if adequate, is certified by HUD as a Workable Program for Community Improvement, qualifying the community for certain Federal aids.

The following Federal aids are available to communities with certified Workable Programs: grants for concentrated code enforcement, demolition of unsound structures, interim assistance, community renewal program, and general neighborhood renewal plan; loans and grants for urban renewal and code enforcement areas and in other than urban renewal or concentrated code enforcement areas and neighborhood development in one or more urban renewal project areas; and mortgage insurance under section 220 for constructing and rehabilitating housing in urban renewal projects areas.

Essential elements of a Workable Program are effective codes and code enforcement, planning and programming, housing and relocation, and citizen involvement as well as provisions for equal opportunity in housing.

Initial certification of a Workable Program is for two years. Recertification is based on review of progress submitted by the community to HUD every two years.

## B. HUD/FHA programs for varied types and densities of multifamily housing

1. Section 202 Below-Market-Interest-Rate Senior Citizen Housing Program (direct loans): The 202 program begun in 1959 is administered by the Housing Assistance Administration which is also responsible for Public Housing.

Under this program, direct 3 percent Federal loans with terms up to 50 years, covering 100 percent of development costs, are available to private nonprofit, cooperative, and limited-profit sponsors and certain public agencies to develop new or rehabilitated rental housing and related facilities for senior citizens (aged 62 or over) and for the handicapped (regardless of age). Sponsors applying under section 202 must show that they cannot obtain the necessary funds from other sources on terms as favorable as those of this program.

Development cost may include costs of land and site improvements; construction, built-in equipment, and architectural, legal, advisory, and other fees.



2. Section 203 Homeownership (One- to Four-Family Homes) Program (mutual mortgage insurance): Section 203 FHA-insured mortgages are made to finance the construction, purchase, or improvement of one- to four-family homes. Mortgage financing on a single-family owner-occupied home may be up to \$33,000. Mortgage financing on nonowner-occupied dwellings are generally limited to 85 percent of the maximum for owner-occupied homes.

3. Section 207 Multifamily Rental Housing Program (mortgage insurance): Section 207, the oldest of the six basic sections of the FHA private multifamily program, is intended to facilitate the production of rental accommodations at middle- to upper-middle-income rent levels.

Section 207 makes available FHA-insured mortgages, currently bearing a 7½ percent interest rate, for the construction or rehabilitation of rental housing. The rental housing project must contain at least eight dwelling units. Each single mortgage insured for a private lender cannot exceed \$30 million; and cannot exceed \$50 million for public lenders.

Housing financed under this program, whether in urban or suburban areas, should provide rental accommodations suitable for family living (families with or without children) and available at reasonable rents.

4. Section 213 Cooperative Housing Program for Sales-, Management- or Investor-Type Co-ops (mortgage insurance): Three types of cooperative housing are permitted under Section 213. (1) the "sales-type" covers the situation where a nonprofit group builds a development and then sells the individual units to its own members; (2) the "management-type" covers the situation where a nonprofit group builds and owns a development and then leases the units on a nonprofit basis to its members; and (3) the "investor-type" covers the situation where a private developer builds and then sells a project in its entirety to a cooperative, which would then lease the individual units to its members.

Under section 213, the Federal Housing Administration will insure mortgages, currently bearing a 7½ percent interest rate, on cooperative housing projects of five or more dwelling units to be occupied by members of nonprofit cooperative ownership housing corporations.

FHA-insured 213 loans may be used to finance: construction of a project; rehabilitation and acquisition of an existing project by a cooperative corporation; improvement or repair of a project already owned by the cooperative corporation and resale of individual memberships; construction of projects of individual family dwellings that will be bought by individual members with separate insured mortgages; and construction or rehabilitation of projects that the owners intend to sell to nonprofit cooperatives.

5. Section 220 Urban Renewal Housing Program (mortgage insurance): Section 220 is designed to provide financing for new or rehabilitated housing to help eliminate slums and blight and to prevent properties from deteriorating.

Section 220 provides rental accommodations for the same market served by section 207--middle- to upper-middle-income housing, but is restricted to designated urban renewal areas and in areas with

concentrated programs of code enforcement and neighborhood development.

Under the 220 program FHA-insured mortgages with terms up to 40 years, currently with an interest rate of 7½ percent, are made on new or rehabilitated homes or multifamily structures. To be insured, a project must contain at least two units and each single mortgage insured for a private lender cannot exceed \$30 million dollars.

FHA-insured supplemental loans are also available under the 220 program to finance improvements that will enhance and preserve salvable homes and rental apartments.

6. Section 221(d)(2) Market-Interest-Rate Homeownership (One- to Four-Family Homes) Program for Low- and Moderate-Income Families (mortgage insurance):

The 221(d)(2) program is designed to help people displaced by government action or by a natural disaster and other low- and moderate-income people to buy homes on terms they can afford.

The 221(d)(2) program mortgages, bearing market-interest-rates, are insured by the Federal Housing Administration to finance the construction, purchase, or rehabilitation of one- to four-family homes.

The mortgage amount on a single-family home may be up to \$18,000 (\$21,000 in high-cost areas--plus another \$3,000 for large families). Families displaced by governmental action or by natural disaster may pay as little as \$200 down on a single-family home. A 3 percent downpayment is required from others.

7. Section 221(d)(3) Below-Market-Interest-Rate Rental and Cooperative Housing Program (mortgage insurance): The section 221(d)(3) below-market-interest-rate program, administered by FHA, assists the construction or rehabilitation of moderate-income rental or cooperative housing projects consisting of newly constructed row houses and walkup apartments. These projects must be located in communities which have Workable Programs, a requirement which has restricted use of the 221(d)(3) program.

Under the program, a limited-profit, non-profit, or cooperative housing sponsor receives FHA-insured mortgage financing at a 3-percent interest rate for a term of up to 40 years. The difference between this financing and conventional mortgage financing (that is, for a shorter term at a market interest rate currently at 7½ percent) enables the sponsor to offer substantially lower rents to tenants--currently \$30 to \$40 below the rents which would be charged if financing were with market rate mortgages.

Even though the availability of a 3-percent loan permits a reduction of monthly rents on 221(d)(3) units, the income limits for admission to public housing in the same area. Income limits are established by HUD and are a function of family size, geographic area and a particular housing program.

The 221(d)(3) low-interest mortgage is permanent financing that can cover up to 100 percent of replacement cost for nonprofit and cooperative sponsors and 90 percent for profit-oriented sponsors. Interim financing must be arranged with conventional private lenders at market interest rates.



8. Section 221(d)(4) Market-Interest-Rate Rental Housing for Low- and Moderate-Income Families (mortgage insurance): Under the 221(d)(4) program mortgages, bearing market-interest-rates, on rental housing projects of at least five dwelling units are insured by the Federal Housing Administration.

For new housing, the mortgage amount may be up to 90 percent of the sum of estimated repair costs and property value before repairs. The dwellings may be in detached, semidetached, row, walkup, or elevator structures.

This housing is intended for low- and moderate-income families, persons aged 62 years or over, and handicapped persons, although there are no family income limitations on eligibility for occupancy. Priority in occupancy is given to people displaced by governmental action.

9. Section 223(e) Program for Housing in Declining Neighborhoods (mortgage insurance): The Federal Housing Administration (FHA) under the 223(e) program is authorized to insure mortgages financing the repair, rehabilitation, construction, or purchase of housing in older, declining urban areas, where conditions are such that certain normal eligibility requirements for mortgage insurance under a particular program cannot be met. Normal economic soundness and economic life requirements in such areas may be waived, and decisions concerning location eligibility may be based on individual merit and the need for housing for low- and moderate-income families. No property will be rejected for FHA insurance solely on the basis of its being in an older neighborhood.

Mortgages for housing eligible under this special program may be insured under any one of several FHA programs. The maximum amount of the loan, the downpayment, and other mortgage terms vary according to the FHA program under which the mortgage is insured.

10. Section 231 Senior Citizen Housing Program (mortgage insurance): Under section 231, the Federal Housing Administration insures mortgages to finance new or rehabilitated rental housing projects of eight or more dwelling units specifically designed for occupancy by the elderly (aged 62 years or over) or the handicapped.

On a project developed by a public-agency or a nonprofit sponsor, the mortgage amount may cover up to 100 percent of replacement cost for new, and 100 percent of value at completion for rehabilitated, housing. On projects developed by profit-motivated sponsors, the percentage in both instances is 90 percent.

11. Section 233 Experimental Housing (Homes and Rental) Program (mortgage insurance): Under this program, mortgages are insured by the Federal Housing Administration on individual homes and on multifamily housing projects that incorporate new or untried construction concepts aimed at reducing housing cost, raising living standards, and improving neighborhood design.

Section 233 is designed to speed the development of new concepts by reducing the risks involved in underwriting mortgages on housing incorporating certain experimental features.

Mortgages to finance properties in projects approved by HUD under section 108 of the Housing and Urban Development Act of 1968 may also be insured under this program. Such projects are for large

scale testing and use of new techniques in developing housing for lower-income families on Federal land made available for this purpose or on other land where State or local regulations permit the construction of experimental housing.

Sponsors applying under the 233 program must be able to prove that the proposed property is an acceptable risk for testing advanced housing design or experimental property standards.

12. Section 234 Condominium Sales-Type Housing Program (mortgage insurance):

Under this program FHA-insured mortgages are made to qualified persons for the purchase of individual family units in multifamily housing projects. FHA-insured mortgages may also be used by sponsors to finance the construction or rehabilitation of housing projects in which they intend to sell individual units on a condominium basis. To be financed under section 234 a project must contain at least four dwelling units, and the structures in a project may be detached, semidetached, row, walkup, or elevator in type.

Under section 234, the applicant for a blanket mortgage covering a condominium project may be any qualified sponsor; the applicant for a mortgage on individual units in a condominium project may be any qualified person.

In condominium ownership a person owns separately one or more single dwelling units in a multiunit project and has an undivided interest with the owners of the units in common areas and facilities serving the project.

13. Section 235 Homeownership and Cooperative Housing for Lower-Income Families (mortgage insurance and interest supplements): Section 235,

added by the 1968 Housing Act, was initially designed to focus on assistance for the construction and rehabilitation of single or multifamily sale or cooperative housing, with a small proportion of the aid for use in assisting families in the purchase of existing housing.

The assistance is similar in form to that of the section 236 interest reduction payments; it also can lower the interest rate paid by the moderate-income buyer to as low as 1-percent.

Unlike other FHA low- and moderate-income housing programs--rent supplement, 221(d)(3), 236--this program is open to private developers who are not limited-profit sponsors.

The developer's commercial mortgage lender receives an FHA commitment to insure the market-interest-rate mortgage of a moderate-income buyer of the section 235 house. The mortgage can be nearly 100 percent of the value of the property. The buyer generally need make only a \$200 down payment which can be used to pay closing costs and pay monthly 20 percent of his adjusted monthly income on the mortgage.

14. Section 236 Rental and Cooperative Housing for Lower-Income Families (mortgage insurance and interest supplements): The 1968 Housing and

Urban Development Act established section 236 as an assistance program for rental or cooperative housing for low- to moderate-income families. The program is aimed at a slightly lower income range than that served by the 221(d)(3) program.

Under 236, limited-profit, private nonprofit, or cooperative housing sponsors can receive FHA-insured mortgage financing for as



low as 1-percent interest rate for a term of up to 40 years, compared with financing at a 3-percent interest rate under 221(d)(3). Under approved 236 insured mortgage plans (combined mortgage insurance and interest supplements), HUD makes monthly interest-reduction payments to mortgagees, on behalf of mortgagors, of a part (approved under the insured mortgage plan) of the interest on market-rate mortgages financing rental or cooperative housing projects for lower-income families.

Section 236 interest reduction payments are also available for rental or cooperative housing projects owned by private nonprofit, limited-dividend or cooperative entities which are financed under a State or local program providing assistance through loans, loan insurance, or tax abatement.

Interest reduction payments cannot exceed the difference between the amount required for principal, interest, and mortgage insurance premium on a market-rate mortgage and the amount required for principal and interest on a mortgage at 1-percent interest. The purpose of the payments is to bring the monthly rental charges down to a level that low-income families can afford to pay with at least 25 percent of their adjusted monthly income.

#### 15. Section 241 Insured Supplemental Loans on Multifamily Housing Projects:

Under section 241, Federal Housing Administration (FHA) insured supplemental loans are available to an owner/sponsor of any multifamily housing project financed with an FHA-insured mortgage.

Such supplemental loans may also be used to finance the purchase of equipment for operation of nursing homes or group medical practice facilities.

### C. Types of ownership in real property

1. Fee Simple: A fee simple is a direct ownership (freehold) or tenure of real property that may last forever and may be inherited by all classes of both lineal and collateral heirs of an individual owner or grantee. There are variations of fee simple ownership (i.e. fee simple defeasible, fee simple determinable, fee simple conditional, fee simple absolute). Fee simple absolute is the maximum possible ownership in real property (under the system of property founded on English common law), having no limitations, qualifications affecting it.
2. Condominium: In condominium ownership a person owns separately one or more single dwelling units in a multiunit (apartment) complex or project, and has an undivided (shared) interest with the other owners of the units in common areas and facilities serving the project.
3. Cooperative or Co-op: In cooperative or co-op type apartment projects, tenants instead of renting their apartments from a private landlord, are themselves owners of the apartment complex, related facilities and land. The "rent" they pay each month pays their share of the cost of constructing and maintaining the apartment complex.

Cooperative tenants do not individually own their apartments. They own a share in the company or corporation that owns the apartment complex and this entitles them to occupy an apartment in the complex. The larger the apartment, the more expensive the share.

There are three basic organizational finance structures for co-ops: management-type; investor-type; sales-type. (Refer to sec. 213, Fed. Housing Prog.)

4. Rent or Rental: A payment or compensation made periodically under a certain agreement by a tenant to a landlord for the use of land, buildings (enclosed space), a residence, or other real (corporeal) property. The agreement usually takes the form of a lease for a term of years or a lease at will.

Lease: A contractual agreement by which one rents land, buildings (enclosed space) or other real (corporeal) property to or from another, generally for a term of years or as or being a "tenant at will" and for a fixed rent. Leases of apartments are generally for short terms--one to five years--while leases of land may run for as long as ninety-nine years, particularly when the tenant intends to put up a costly structure. Long-term leases are highly complex contractual agreements with numerous pages of provisions containing particulars dealing with fire, renewals, and a host of other clauses.

### D. Finance terminology (housing - construction/building)

1. Amortization: Amortization refers to the periodic repayment of principal and interest on a loan (for example, the loan is amortized over a 25 year period at an interest rate of 7½ percent). Each payment under a particular amortization plan usually increases in the proportion of the payment that is applied against the principal and decreases in the proportion that is applied against the interest.
2. Blanket Mortgage: This is a mortgage that covers more than one housing unit. Each purchaser gets his own mortgage on his own unit. Blanket mortgage is another term for project mortgage where homes are to be sold.
3. Debt Service: The required periodic payment of principal and interest on a loan. Debt service payment generally are required on a loan secured by a long-term mortgage or by a bond, and may be required on business and personal loans. Debt service does not include the payments for taxes, hazard insurance, and mortgage insurance which may be made together with periodic mortgage loan payments.
4. Developer: A developer is a person or company that organizes and carries out the construction of buildings and other facilities. At the completion of construction, the developer usually sells, leases or rents the buildings, etc. to others.
5. Financing: Refers to the method or program under which a mortgage arrangement is made and carried out for retiring of capital cost



11. Land Use: Refers to the type of activities (residential, commercial, industrial, transportation, park or open space, public, semipublic, etc.) carried on the land.
12. Living Area, Net: Sum of total square footage of habitable spaces-- basic areas (balcony--1/2 of area, living space, dining space, kitchen, one or more sleeping spaces) of a dwelling unit.
13. Planned Development Area (PDA) or Planned-Unit Development (PUD): Refers to a particular zoning designation for a particular area of land with respect to a development plan proposal for the total design/development of a physical facility to be constructed on the particular area of land.  
The development's intended principal uses are usually described in terms of the activities of the potential users.  
The development plan proposal (written and graphic documents) is submitted to the local governmental planning or development authority for approval, and if approved is executed in accordance with the approved development plan (written and graphic documents).
14. Site Area, Gross: The area of a project within the property lines (to be used for immediate development), plus the area to the center line (not measured beyond 40 feet) of all boundary streets and one-quarter the area of all boundary intersections (not figured over 1600 sq. ft.), plus the area, to a maximum distance of 40 feet, of any adjoining public park, playground, or any other adjoining open or unbuilt-on area which may reasonably be assumed to be permanently open. Gross area shall not include areas reserved for future use, nor street area transversing such land, nor any street area or other open area adjoining such land--(United States Housing Authority, 1941).
15. Site Area, Net: (Referred to in this study as "total site area"). The area within the property lines (to be used for immediate development) including service drives, small play spaces, sitting-out areas, laundry drying yards, and automobile parking areas, but excluding all public boundary streets and public streets which transverse the site (existing or dedicated), land reserved for future development, unbuildable land, major recreation or park areas or major automobile parking spaces additional to the overall project pattern of spaces, and the land covered by and immediately associated with community buildings, central or group heating plants, commercial buildings, and other non-residential structures--(United States Housing Authority, 1941).
16. Turnover Rate: The turnover rate is the percentage of dwelling units vacated by tenants per year in relation to the total number of occupied dwelling units in the complex for the particular year of time in question (vacated dwelling units/total number of dwelling units).
17. Unit Area, Gross or Gross Inside Space: Total square footage of basic areas (i.e. balcony--1/2 of area, living space, dining space, kitchen and the one or more sleeping spaces), plus horizontal circulation plus mechanical area.

18. Usable Area, Net: Sum of total square footage of the basic usable or habitable areas of a building; the total net living area of a dwelling unit (including basements, mezzanine and intermediate floored tiers and penthouses of headroom height) plus horizontal circulation area.
19. Vacancy Rate: The vacancy rate for a residential complex at a given time is the percentage of vacant dwelling units in relation to the total number of dwelling units in the complex (vacant dwelling units/total number of dwelling units).
20. Zoning: The partitioning of a community or area, by ordinance into zones, and the establishment of regulations in the ordinance to promote the health, safety convenience, morals and welfare of the inhabitants of the area, to encourage the most appropriate use of land throughout the area; to prevent overcrowding of land; to conserve the value of land and buildings; to lessen congestion in the streets; to avoid undue concentration of population; to provide adequate light and air; secure safety from fire, panic and other dangers; to facilitate adequate provision for transportation, water, sewage, schools, parks and other public requirements; and to generally increase the amenities of the area.



## E. Building types

1. Garden Apartments: Low-rise, multifamily housing surrounded by landscaped open space. These structures contain either several two-story or duplex apartments, or more frequently, several single-floor apartments, one over the other.  
Requiring no hallways or elevators and only semifireproof construction because of their lowness and easy egress, garden apartments compensate for the greater land cost per occupant. Their low height, wider spacing permit a pleasant outlook as well as ample light and air. More numerous but smaller service stacks are necessary per building for taller structures.
2. Row: One of a series of dwelling units connected to other dwelling units by common sidewalks and forming a continuous group.
3. Slab or Corridor Type: High-rise, multifamily apartment structures typically characterized by double-loaded interior corridors or single-loaded porch-like corridors; both with basic dispositions of dwelling units and service cores. A number of ventilation and orientation patterns are possible. These structures are usually designed in terms of a rectangular building plan.
4. Tower: High-rise, multifamily apartment structures typically characterized by a basic central core arrangement for service facilities (mechanical equipment, elevators, chases). A greater variety of geometric forms, with respect to building plan, is found among this type of high-rise apartment structure--yet the central core arrangement is prototypical.

## F. General construction / building terminology

1. Building Area, Gross: The sum (total sq. ft.) of the basic areas (net living area, circulation area, mechanical area, construction area--structure, wall thickness) of the several floors of a building as measured by the exterior face of the walls, including basements, mezzanine and intermediate floored tiers and penthouses of headroom height, added to total percentages of partial areas (i.e. garage--2/3 of area, carport--1/2 of area, unenclosed porch--1/2 of area, enclosed porch--2/3 of area, unfinished basement--1/2 of area, covered walkways (paved)--1/2 of area, open area under building (paved)--1/2 of area, canopies--1/4 of area, two story room--1/2 of area, penthouse (headroom height)--2/3 of area, tunnels under 6'-0" wide w/slab--1/2 of area).  
Gross building area does not include unfinished attics (finished attics are included where headroom is 5'-0" or over), crawl space, terraces, pipe trenches nor chimneys.
2. Building Code: National and/or locally adopted ordinance, or regulation, enforced by police powers under the concept of health, safety, and welfare controlling land use; the design, construction, alteration,

repair, quality of materials, use and occupancy, and related factors of any building or structure within its jurisdiction. Building codes usually include the regulation of equipment and facilities installed in the building, such as electrical, mechanical, plumbing, heating equipment, or such equipment may be regulated in separate ordinances.

3. Building Coverage or Net Coverage: As used here, building coverage refers to the ratio of the ground area of the dwelling structures to the net area of land. Ground area is the area at grade level of all dwelling buildings, including bays, chimneys, and enclosed porches to the outside surface of exterior walls. Outside stoops, steps, terraces, and footings are not included (United States Housing Authority, 1941).
4. Duplex: A suite (unit) in an apartment building that has rooms on two floors.  
The term "duplex" is also used to describe a two-family or semi-detached house; two units of housing under a mono-continuous roof.
5. Dwelling Unit: A room or group of rooms forming a habitable unit for one family with facilities used or intended to be used for living, sleeping, cooking, and eating.
6. Efficiency Apartment vs/Regular Family Apartment: An efficiency apartment is a small apartment providing the minimum space required for one's habitation (living, sleeping, cooking, eating). For living purposes, it may be neither efficient nor sufficient, but since it uses less space, it may be cheaper.

A regular family apartment typically provides a marginal amount of habitable space to accommodate a particular size family. Regular family apartment units contain one or more bedrooms or sleeping spaces and a number of other living/activity spaces to accommodate a variety of different size families.

7. Efficiency Index, Building: The percentage of net usable space in relation to gross building area (net usable area/gross building area).
8. Efficiency Index, Site: The percentage of building coverage in relation to net site area (building coverage/net site area).
9. Efficiency Index, Dwelling Unit: The percentage of net living area in relation to gross unit area (net living area/gross unit area).
10. Floor-Area Ratio (FAR): A formula for regulating volume using an index figure that expresses the total permitted floor area as a simple multiple of the area of the site.  
For example, a ratio of 2 on a 10,000-square-foot site would permit a two-story building with 10,000 square feet on each floor, or a ten-story building with 2,000 square feet on each floor, or a variety of similar combinations, with the total floor area not exceeding 20,000 square feet.



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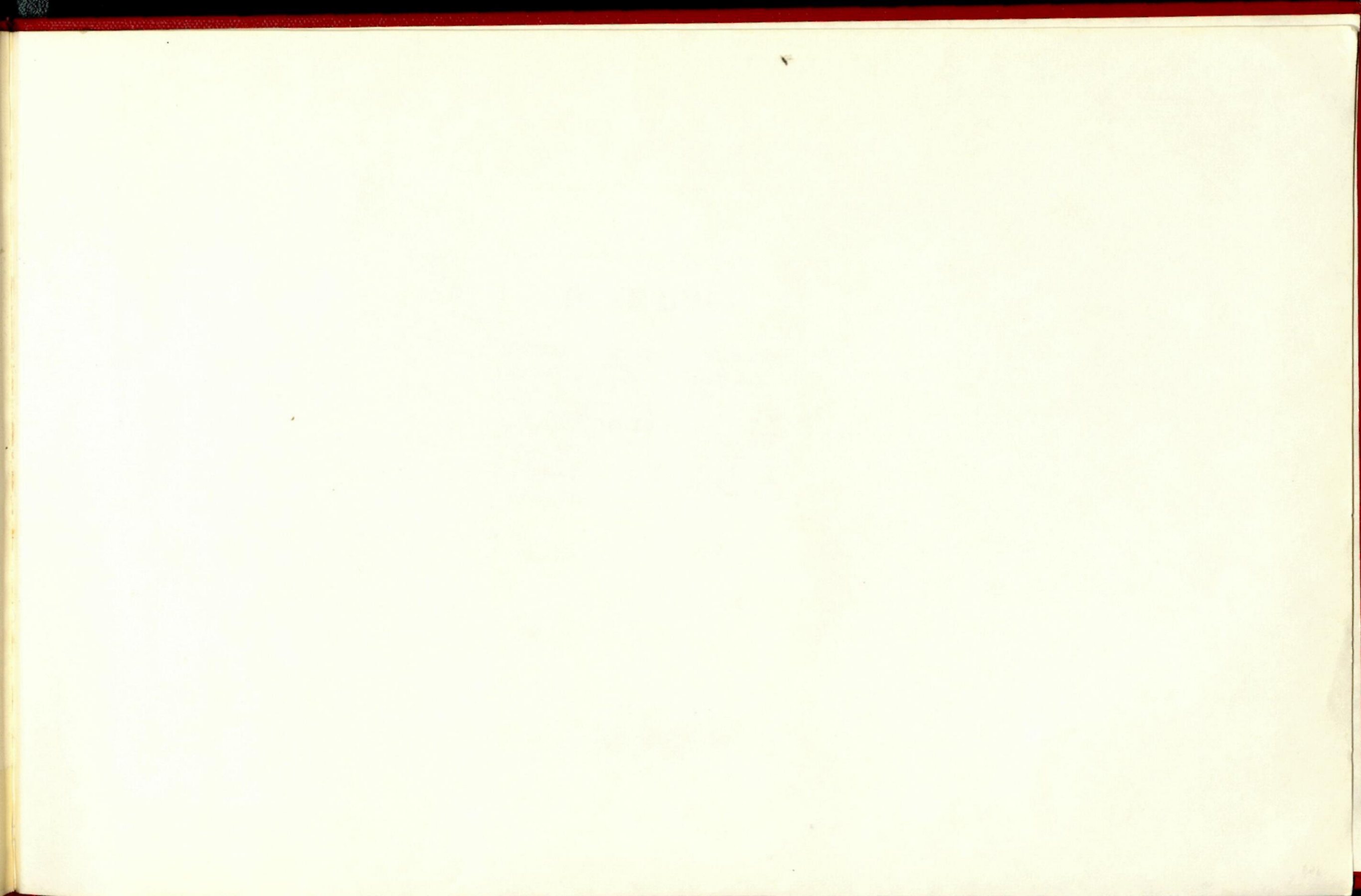
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